July · 1953

(2)

finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

You Can Depend on "Ceramic" Quality and Service

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Color Oxides; Screening Colors; Smelter Color Compounds; Printing, Graining, Stamping, Banding and Decalcomania Colors.

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FOR CHEMICALS

Aluminum Hydrate
Aluminum Oxide
Ammonium Metavanadate
Antimony Oxide
Antimony, Black Needle
Arsenic Oxide, White
Barium Carbonate
Barium Chromate
Bentonite
Bone Ash
Borax
Boric Acid
Cadmium Carbonate
Cadmium Sulphide
Calcium Carbonate
Chromium Oxide
Clay, Ball and China
Cobalt Carbonate
Cobalt Compounds
Cobalt Nickel Compounds
Cobalt Oxide
Cobalt Sulphate
Colemanite, Synthetic
Copperas
Copper Carbonate
Copper Oxide
Copper Sulphate
Cryolite
Dolomite
Epsom Salts
Feldspar
Flint
Fluorspar
Gum Arabic
Gum Tragacanth
Iron Chromate
Iron Chromite
Iron Oxide, Fractionated and Powdered
Kryolith
Lead Bisilicate
Lead Chromate
Lead Monosilicate
Red Lead
White Lead
Litharge
Lithium Compounds
Magnesite
Magnesium Carbonate
Manganese Dioxide, Fractionated and Powdered
Molybdenum Compounds
Nepheline Syenite
Nickel Oxide, Grey
Nickel Oxide, Black
Nickel Oxide, Fractionated
Nickel Sulphate
Opax
Potassium Bichromate
Potassium Carbonate
Potassium Nitrate
Potassium Silico Fluoride
Powder Blue
Pyrophyllite
Rutile, Powdered
Selenium
Soda Ash
Sodium Antimonate
Sodium Bichromate
Sodium Fluoride
Sodium Nitrate
Sodium Nitrite
Sodium Silicate
Sodium Silico Fluoride
Strontium Carbonate
Superpax
Talc
Tin Oxide
Tungstic Acid
Titanium Dioxide
Urea Crystals
Whiting, Cliffstone and Domestic
Zinc Oxide
Zircon, Milled
Zircopax
Zirconium Silicate
Zirconium Oxide

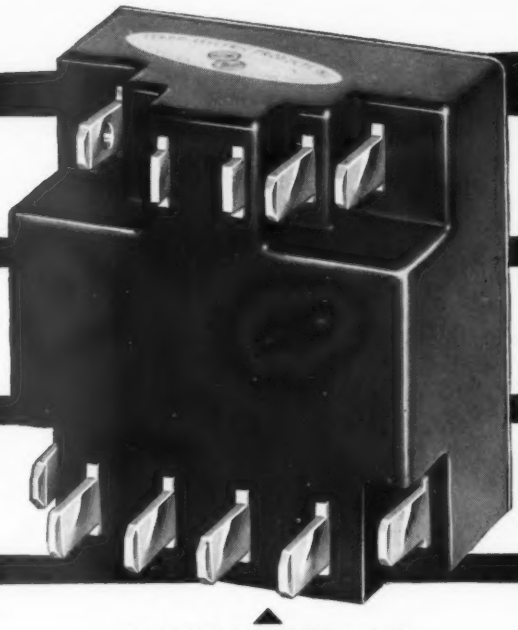
WENNING CERAMIC COLORS TRADE MARK

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U. S. A.

ADS OUT

LOOKING FOR *Something New* IN SWITCHES?

(This one helps SELL room air conditioners)



POSITION I
"VENTILATE"
(Evaporator, on full)

POSITION II
"EXHAUST"
(Condenser, on full)

POSITION III
"COOL and EXHAUST"
(Evaporator, on low; Condenser, on full; Compressor, on)

POSITION IV
"DEHUMIDIFY"
(Same as position III)

POSITION V
"SUMMER COOLING"
(Evaporator and Condenser, on full; Compressor, on)

POSITION VI
"SLUMBER COOLING"
(Evaporator and Condenser, on low; Compressor, on)

POSITION VII
"HEATING"
(Evaporator, on full; 1250-watt heater, on)

POSITION VIII
"OFF"

Special 8-POSITION switch
MODEL 190

The designing and building of *circuit selector switches* is an important part of Ferro's business. And we're not too big to fuss with *your* special requirements, provided the potential production volume justifies the effort—*both* for you and for us.

Whether your problem is one of space and compactness or the best handling of an intricate wiring pattern, you'll find interested, competent "first aid" here at Ferro. You'll find also that the finished product is *right* due to our small labor turnover and rigid testing and inspection system.

Illustrated above is one of our more elaborate switches. Shown at the right is a simple, 3-position model. Somewhere between the two may be the special switch you are looking for. *Why not write* and tell us your requirements?

FERRO ELECTRIC PRODUCTS, INC.
A Subsidiary of Ferro Corporation
KIRKLAND, ILLINOIS

AMERICAN CHEMICAL PAINT COMPANY
AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: *GRANODIZING** FOR LONG PAINT LIFE ON STEEL

"GRANODINE" FORMS A DURABLE PAINT BOND

Granodizing forms a crystalline, zinc phosphate coating on steel. This ACP paint-bonding process chemically changes the surface of steel into an inert non-metallic coating made up of thousands of microscopic zinc phosphate crystals.

Granodized steel thus presents a surface much more receptive to paint than untreated steel. Its crystalline structure permits a firm and durable "keying" or bonding of the paint finish. And the "Granodine" zinc phosphate coating itself is actually integral with the metal from which it is formed.

"GRANODINE" CAN BE APPLIED BY DIPPING, SPRAYING OR BRUSHING

Granodizing can be accomplished by:

1 Dipping the work in tanks;
2 Spraying the parts in a power washer; or
3 Brushing, spraying, or flow-coating the work with portable hand equipment.

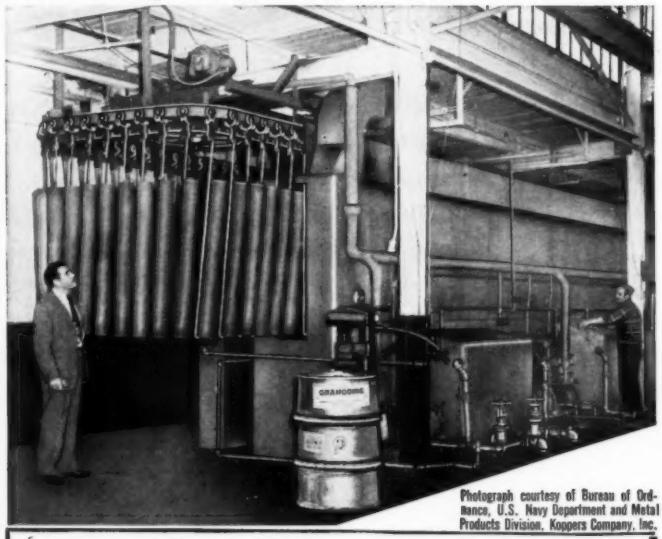
Choice of process is usually decided by such factors as the size, nature, and volume of production.

"GRANODINE" STANDARD PRACTICE ON BOTH CIVILIAN AND MILITARY PRODUCTS

Automobile bodies and sheet metal parts, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, tanks, trucks, jeeps, containers for small arms, cartridge tanks, 5-gallon gasoline containers, vehicular sheet metal, steel drums and, in general, products constructed of cold-rolled steel in large and continuous production are typical of the many products whose paint finish is protected by "Granodine".

In military production, "Granodine" is used to obtain a zinc phosphate finish meeting Grade I of JAN-C-490 and equivalent requirements of other specifications.

*"GRANODINE" Trade Mark Reg. U.S. Pat. Off.



Photograph courtesy of Bureau of Ordnance, U.S. Navy Department and Metal Products Division, Koppers Company, Inc.

Typical power spray washing machine for the automatic application of a protective phosphate coating to metal parts in preparation for painting. These 5" rocket motor tubes, as well as products made of cold rolled sheet steel, are effectively phosphate coated in such equipment.

CHEMICALS ACP PROCESSES

MEETINGS

ASTM ANNUAL MEETING

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 29-July 3.

HOUSEWARES SHOW

National Housewares Show, Auditorium, Atlantic City, N. J., July 13-17.

HOME LAUNDRY MFRS. SUMMER MEETING

American Home Laundry Manufacturers Association, summer meeting, Grove Park Inn, Asheville, N.C., July 26-29.

ENAMEL INSTITUTE FORUM

Porcelain Enamel Institute, annual Shop Practice Forum, Ohio State University, Columbus, September 16-17.

INSTRUMENT CONFERENCE

Instrument Society of America, National Instrument Conference and Exhibit, Chicago, September 21-25.

PEI ANNUAL MEETING

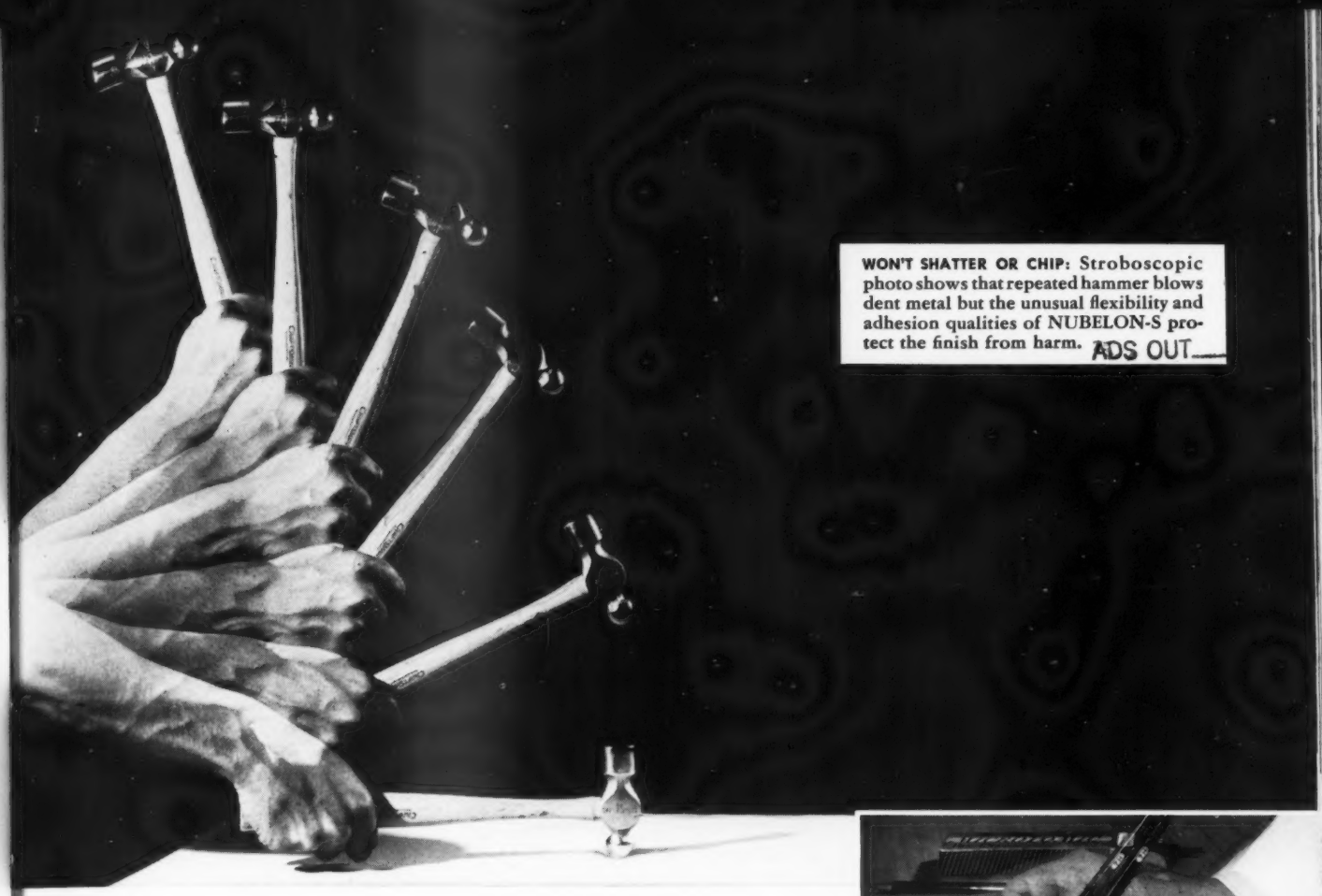
Porcelain Enamel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., September 30-October 2.

METAL STAMPERS MEETING

Pressed Metal Institute, annual meeting, Bellevue-Stratford Hotel, Philadelphia, October 7-10.

INDUSTRIAL PACKAGING EXPOSITION

Society of Industrial Packaging and Materials Handling Engineers, annual Industrial Packaging and Materials Handling Exposition, Short Courses and Competition, Mechanics Hall, Boston, Mass., October 18-24.



WON'T SHATTER OR CHIP: Stroboscopic photo shows that repeated hammer blows dent metal but the unusual flexibility and adhesion qualities of NUBELON-S protect the finish from harm. ADS OUT

ENTIRELY NEW BAKING ENAMEL!

NUBELON-S

TOUGHEST — MOST FLEXIBLE EVER DEVELOPED

Now—for the first time—here is a finish that is much harder than any known organic film . . . yet is so flexible and adheres so well it can be bent and twisted without cracking.

More than five years in the making, NUBELON-S combines unique properties which make it ideal for use on home appliances, metal furniture, prefabricated farm silos, fencing wire, and many other applications.

NUBELON-S is available in whites, greys, yellows, blue, tan, green and red. It bakes at 425°F. for 30 minutes.

This new coating is already in use by a number of manufacturers and is being tested by many others. There may be countless applications not yet explored for this extraordinary new enamel. It you have a potential end use which warrants development, we will welcome your inquiry.

Write today for a descriptive folder giving complete NUBELON-S specifications.

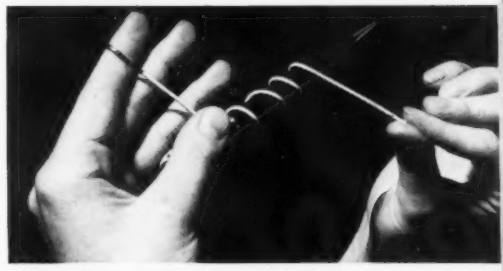
THE GLIDDEN COMPANY

INDUSTRIAL FINISHES DIVISION

11005 MADISON AVENUE • CLEVELAND 2, OHIO

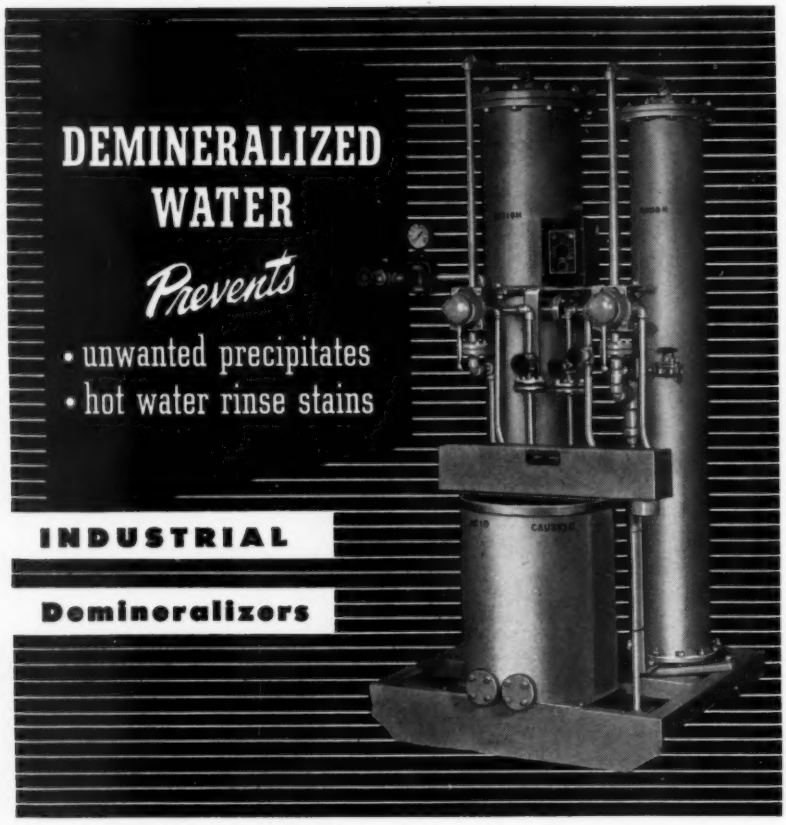
SALES OFFICES AND FACTORIES: San Francisco, Los Angeles, Chicago (Nubian Division—1855 North Leclaire Ave.), Minneapolis, New Orleans, St. Louis, Cleveland, Reading, Atlanta and Toronto.

HIGH HARDNESS: Pencil hardness test shows the NUBELON-S film is 50 per cent harder. It withstands a 7-H pencil as compared with a 2-H for generally used appliance finishes.



EXTREME FLEXIBILITY: NUBELON-S on wire is spiraled around a pencil to demonstrate the flexing it can take without cracking or flaking.

EXCELLENT STAIN RESISTANCE: All typical household stains, many of which cause permanent damage to ordinary organic finishes, wipe off NUBELON-S easily without leaving a trace.



...and the cost is very low...

With an INDUSTRIAL demineralizer chemically pure water, in any quantity, runs as low as a few cents per thousand gallons, depending upon the amount of dissolved solids in the raw supply water. And the equipment required is very simple — no heat, steam, or cooling water is used. Units can be made to deliver almost any quantity of purified water. The operation is practically automatic — only limited attention is needed periodically.

INDUSTRIAL demineralizers are supplied with necessary equipment including resins, pressure gauge, flowmeter, purity indicator, control valves, and with vulcanized rubber lining in columns and regenerant tanks.

Standard INDUSTRIAL demineralizer units have capacities up to 1000 gph. Special units of any capacity are engineered to special requirements of quality or quantity.

Full particulars and recommendations for any job will be given upon request.

4382

INDUSTRIAL

FILTER & PUMP MFG. CO.

5906 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
CORROSION TEST CABINETS
HEAT EXCHANGERS

conference on appliance controls

Gentlemen:

Your coverage of our District Meeting at Louisville, April 22-24, left nothing to be desired.

As vice president of the American Institute of Electrical Engineers assigned to the Southeastern District, known as District 4, was exceedingly happy and also very fortunate to be host to the Commercial and Domestic Appliance Technical Group of the Institute, which was a major contributing factor, of course, to the success of our meeting because they drew the largest attendance.

The subjects discussed in your meetings were very timely and most interesting, and definitely established the fact that the design and manufacture of modern appliances today must be handled by men of technical ability and accomplishments.

With reference to Page 19 of the June issue, the photograph of ex-Governor Johnson captured something of his genial smile and magnetic personality. As for myself, I was proud to have been there and consider it a great honor to have been so recognized.

Many, many thanks to you and your editorial staff for the coverage of our meeting.

E. S. Lammers, Jr.
Westinghouse Electric Corp.
Atlanta, Gorgia

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the publication for light gauge metal fabrication industries

Gentlemen:

I feel that your magazine is the finest publication available to anyone in the light gauge sheet metal fabricating industries. Of all the magazines that come across my desk monthly, I can certainly say that we get more good ideas from your publication than from anything else we read.

Edward N. Haskell
Haskell Manufacturing Co., Inc.
Pittsburgh, Pennsylvania

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helpful new equipment section

Gentlemen:

Could you give me more information on the new electronic portable

to Page 72 →

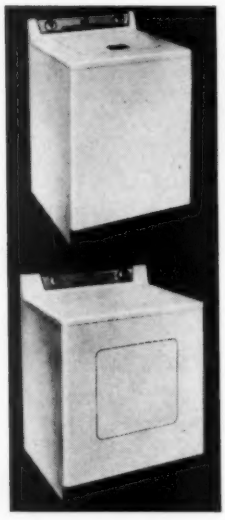
THE finish spotlight

ADS OUT

Republic Steel Kitchens include a reversible corner cabinet for turning corners to right or left in a continuous installation, shallow drawer inserts for silverware storage, and a typewriter-type lift shelf for mixer storage. The lift shelf, which locks into place while the mixer is in use, is installed in an 18-inch base cabinet.

"D-Enameling*... a boon to production economy"

states **T. R. HOLMAN**
Purchasing Agent
THOR CORPORATION



Thor

Thor Corporation, 2115 South 54th Ave., Chicago 50, Ill.

New Process D-Enameling Corp.
Aurora, Illinois

Gentlemen:

We'd like to take this opportunity to tell you how well satisfied we are with D-Enameling. We must admit that two years ago when we first sent our parts to you as a test we were somewhat skeptical. But we can certainly tell you now that the D-Enameling and re-enameling results wiped out any doubts from our mind. To say we are pleased with D-Enameling is putting it mildly. From the savings it produces, it would not be amiss to say that D-Enameling is a boon to production economy.

Cordially,

Purchasing Agent

Manufacturers of Quality Home Laundry Appliances Since 1906

Thor Corporation, like so many other progressive manufacturers of home appliances, has learned from experience how D-Enameling transforms defective enameled parts which were formerly complete loss as scrap into first class production parts that now contribute to the profit picture. This is evidenced by Mr. Holman's letter in which he states in part, "D-Enameling is a boon to production economy."

D-Enameling can very well mean the difference between profit and loss. It will pay you to investigate the possibilities that D-Enameling offers you. In fact, we'll prove its benefits at our expense! All you need do is write, wire or phone us so that we can make arrangements to D-Enamel three or four parts NO CHARGE. When you see the results and learn how inexpensive D-Enameling really is . . . how it may help your profit picture, you'll be sold. Just get in touch with us. Do it today . . . now!

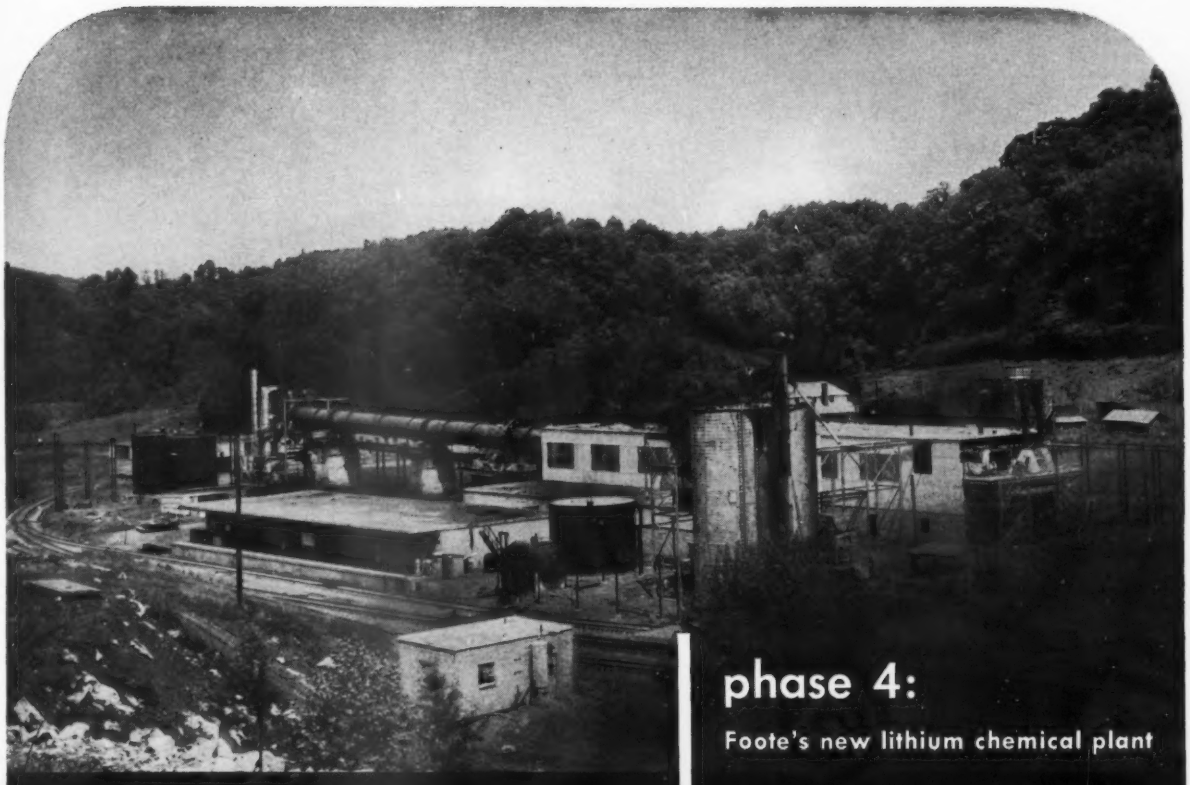
*D-ENAMELING IS A PATENTED PROCESS.

D-ENAMELING SAVES DOLLARS...
D-ENAMELING SAVES STEEL

Since October 1949, D-Enameling has saved over 20,000 tons of fabricated steel parts.

New Process *D-Enameling* Corp.

Highland and New Haven Avenues • Aurora, Illinois



phase 4:

Foote's new lithium chemical plant

This plant at Sunbright, Va., is designed to double the productive capacity of the entire lithium chemical industry.

phase 3—Pilot plant operations of an exclusive lithium process developed by Foote.

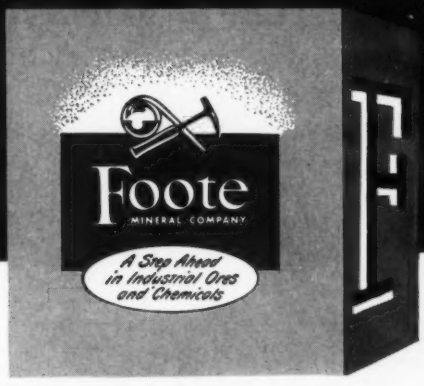
phase 2—Kings Mountain, N. C. —Mining largest known deposits of spodumene.

phase 1—Continuing Foote research...finding new and improved uses for lithium chemicals.

YOUR LITHIUM HORIZON

As the production gears of the new Foote lithium chemical plant at Sunbright, Va., mesh with those of our Kings Mountain raw material unit, vastly increased quantities of lithium chemicals will go into industry . . . for ceramic bodies, glass and porcelain enamels . . . for multi-purpose lubricating greases . . . for air conditioning . . . for welding rod coatings . . . and for numerous other important industrial products.

With Sunbright coming into production — the future is bright with lithium. Now is the time to project your plans with Foote . . . lithium.



FOOTE MINERAL COMPANY

412 Eighteen West Chelten Building; Philadelphia 44, Pa.
RESEARCH LABORATORIES: Berwyn, Pa.
PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

Industrial application of metal spinning

a non-technical description of spinning operations — manual and "automatic"

by Arnold Hildebrandt • CHIEF FIELD ENGINEER, SPINCRAFT, INC., MILWAUKEE, WISCONSIN

finish

Only the soft-non-ferrous metals were employed in industrial spinning applications as late as the first World War. It was about 1920 that a few men of the industry began to experiment with tougher materials, heavier gauges, and larger diameters. So the amazing examples of metal spinning skill in evidence today are the results of only 30 years' progress.

Left: A 96" diameter Corona shield spun and fabricated from 3/16" thick 2SO aluminum. The unit consists of a dished head welded to a "donut" ring. Spectacular in appearance and service, this is one of a series of sizes spun and fabricated for use in U.S. Navy communications.

Below: A spun steel electrical connector for a shielding loom — smaller than a thimble.

Metal spinning is a method of forming seamless, cylindrical shapes from sheet metal discs without the use of stamping or drawing dies. A wood or metal form is turned to the shape and dimensions required on the inside of the finished part. This "block" is screwed to the headstock spindle of the lathe, a flat metal blank is clamped to the front of the "block" and both the form and the metal revolve at a high rate of speed. The operator, or "spinner," applies pressure to the blank with a long blunt-ended tool. This tool is skillfully controlled with his arms, hands, and body as he flows the metal over the form until it fits like a glove.

Heavy gauges of metal are more easily worked with a lever-type tool which allows changes of fulcrum to gain maximum leverage. This type usually has a "roller" of highly polished tool steel revolving in contact with the part being spun, which is generally called the "spinning."

The same principle has been adapted to automatic and semi automatic set-ups. The gauge and size of spun parts has thus increased in proportion to the size of machines built, the pressure that could be obtained, and the speed with which it could be applied.

Three basic shapes for spinning

It is possible to adapt metal spinning to the most intricate job. But let us point out some economical and efficient design approaches to the use of metal spinning.

The shape of a part to be spun may also depend upon the size and gauge of material. To be adaptable to spinning, an article must be generally concentric or round. It may be of a straight cylinder with the same diameter throughout, hemispherical, conical, a partial circle or any segment of a circle.

Editor's Note:

For many months the editors of *finish* have been following one of the most interesting developments in the appliance and home products field — the steel television "tube."

The author's company, Spincraft, Inc., has helped to pioneer this development, and has fabricated more than 2,000,000 metal television cones in stainless steel and enameling iron.

This opening article by Mr. Hildebrandt represents an elementary description of metal spinning and examples of the spinning technique. In the August issue, Mr. Hildebrandt will describe "Fabricating the Steel Television Cone."

Later articles will cover finishing, assembly, and complete production information on the steel television tube.

Oval spinning is possible but impractical and costly. It is also possible to spin concentric details into any part of a square or rectangular sheet, providing clearance can be obtained for the maximum hypotenuse, in the blank.

Let us consider three basic shapes — the cone, hemisphere, and a straight-sided cylinder.

Cone — From the standpoint of design, metal spinning is the reverse

Left: A craftsman, called a spinner, exerts pressure on the disc with a long blunt tool.

Right: This tool is deftly controlled with arm, hands and body. It forces the metal to flow snugly over the form. It looks like liquid as it flows under the tool from the center out to the edge.

of metal stamping. In stamping, the straight-sided cylinder is the easiest to produce; the cone is the most difficult. The conical shape is the easiest shape formed by metal spinning; consequently, it is the most economical. This is due to the fact that the conical spinning form projects itself to meet the metal in easy angles. The metal is not subjected to severe strain even when worked down to its extreme depth.

Hemisphere — The hemispherical shape is more difficult to spin. The first three spin-downs have gradual angles and are relatively easy. However, the angles grow increasingly sharp and the spinning more difficult as the metal is forced farther down on the form.

Straight-sided cylinder — In spinning a sharp angle, the metal is exposed to great strain, requires more time and skill to hold to accurate tolerances. Also, that is the reason the straight-sided cylinder is not as economically adaptable to metal spinning as the hemisphere or the cone.

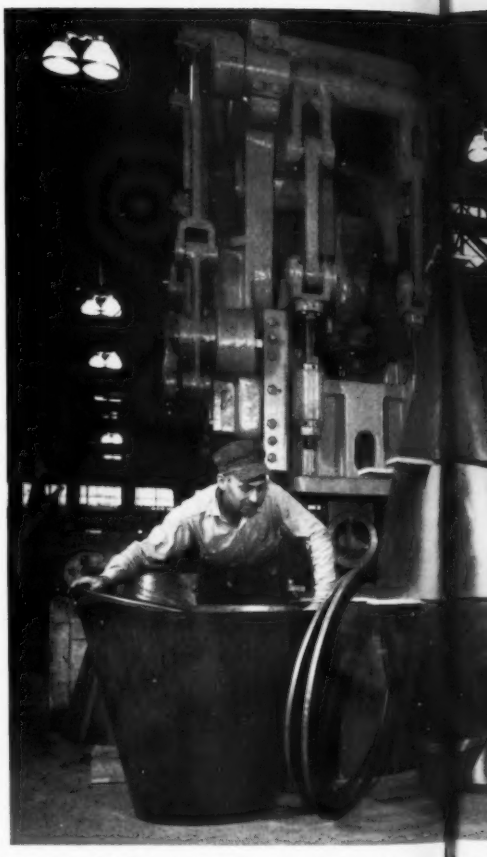
All three shapes are successfully produced in most spinning shops. The conclusion to draw is simply that the avoidance of sharp angles in a new product design saves time, avoids extra operations, and reduces the cost.

Spinning vs. stamping

Metal spinning frequently answers the industrial prayer to make it both cheaper and better at the same time. Spinning can do this quite regularly when the type of product and quantity involved fall into the natural range of spinning's full efficiency.

In considering which of the methods is most economical to adopt, it is necessary to weigh other factors — thickness of metal, weight, tolerance, etc., which must meet with the specification of the jobs in question.

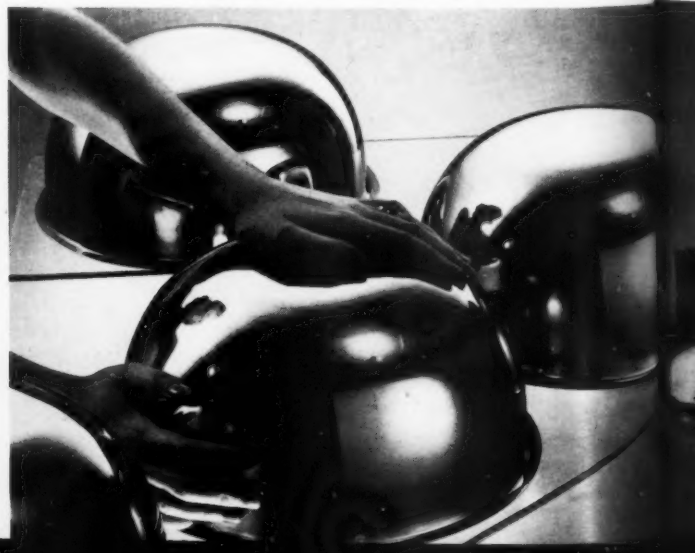
The following are labor and material costs on two typical jobs: A 14 gauge (.0747) steel lid, 10″ diameter x 2⅜″ deep with a ¾″ corner radius. The cost of stamping tools is $1120.00. The cost of spinning tools is $46.97. With tools amortized, in quantities up to 5,000

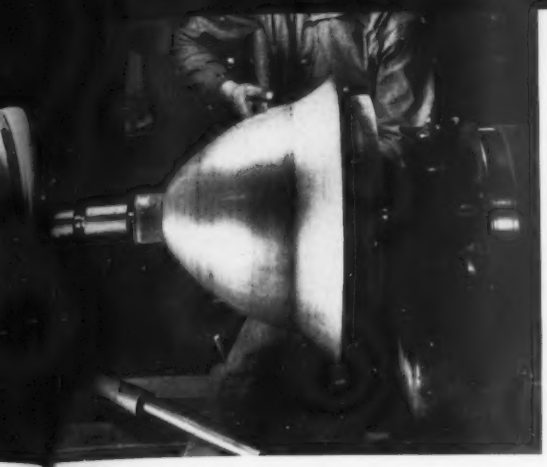


Spun and fabricated 15 gauge steel guide vane, [illegible] horizontally for airflow measurement. The bo[illegible] nose section is spun from a solid blank. On[illegible]

Spun light reflectors spun from aluminum or stainless steel.

Spun stainless steel mixing bowls.





Left: Basically, all metal spinnings are produced by this method; but special development and new techniques adapt the principles to a variety of set-ups, some of which are semi-automatic.

Right: The completed spinning, a propeller cap, is shown from blank to final form.

e vane, ...er sections, considerable tooling cost and spin-The bo...g time is saved by spinning rolled and welded nk. On ... cylinders and cones to the desired contours.

Special wheel hub caps are spun.

pieces, a spinning at 92¢ each is cheaper than a stamping at 95¢ each. An 18 gauge (.0478) steel cone with a 3″ diameter at the small end,, a 20½″ diameter at the base, 13½″ deep with a 33° rcf angle. The cost of stamping tools is $12,000. The cost of manual spinning tools is $175.00. With tools amortized, up to 5,000 pieces, a manually spun cone at $3.53 each is cheaper than a stamping at $4.00 each.

Automatic spinning

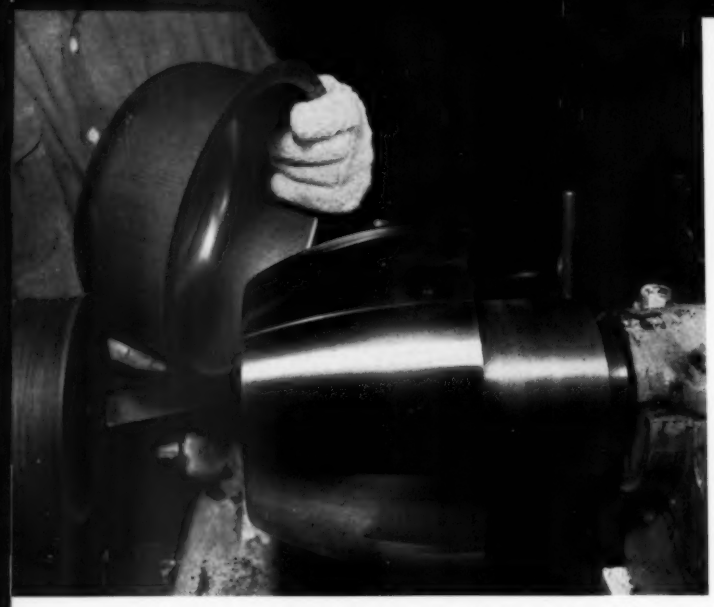
At this point, while discussing the conical shape, we take a logical step into the field of automatic spinning. In the case of the cone described, the quantities can be extended further and still show remarkable savings by metal spinning.

The cone described here can be produced by the automatic lathe in one operation in less than a minute. As a stamping, the identical cone would require five draws plus three heats for intermediate annealing. In addition to the original tool cost for stamping, special equipment to further reduce the cost of stamping on runs beyond 10,000 pieces would require the investment of another $30,000 in tool costs, while tooling for automatic spinning remains at $1500 regardless of the size of the run.

Since there are many thousands of cone-shaped or pan-shaped items commonly used in industry, the automatic lathe can make worthwhile contributions toward cutting costs in the production of parts that will lend themselves to this method.

However, the automatic lathe is not entirely confined to large quantities for economical production. Frequently, it adapts itself economically to quantities as low as 25 pieces. For →

Coffeemaker parts — unusually deep manually spun stainless steel parts for experimental units. In production, spinning is too costly, but combinations of spinning and stamping sometimes effect economies.



Shell for a Westinghouse deep fryer produced by combined drawing and spinning operations. Quantities required warranted complete stamping tools for production. Urgency of early production made spinning desirable while complete draw dies were being made. Left: Pre-stamped shell is placed on spinning block for further forming. Right: Spinning operation is complete and ready to trim to size.

instance, materials too heavy to spin manually, can be done automatically in small quantities at a saving. The same would be true of lighter gauge materials which might be practically unspinnable manually, but could, by the greater pressures and speed possible by the automatic lathe, be spun into conical shapes.

Spinning plus stamping

Perhaps the most promising avenue of progress opened by automatic spinning is that it indicates closer cooperation between spinning and stamping. For instance, the rectangular television picture tube is first spun in the round and then formed into rectangular shape in the subsequent deep drawing or stamping operation. There are many other similar applications.

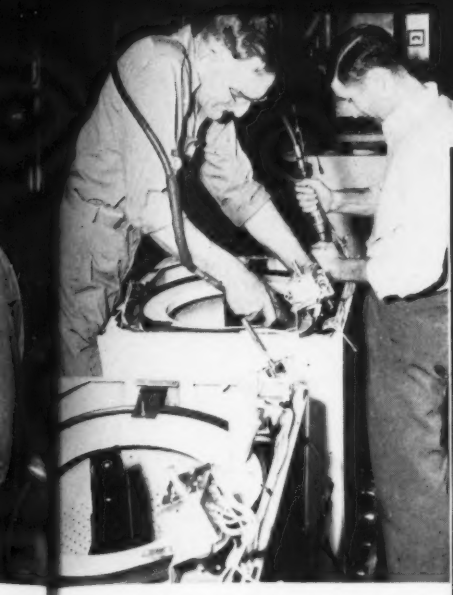
Combination of spinning and fabricating techniques

The combination of spinning and fabricating makes possible production of items which could not be made by metal spinning alone. There are many industrial requirements which cannot be spun out of one flat metal blank. Either the part is too deep, or the material is too heavy, or intricate design will not allow spinning from one solid flat blank. In such cases, spinning the part in sections and then welding together opens the field to production of some large and intricate shapes.

Also, great economies can be effected if the particular part required can be spun from a rolled and welded cylinder, or a rolled and welded cone. In other words, in a deep shape, although it might be possible to spin from a flat blank, a great deal of tooling and much spinning time will be involved to produce such a part. However, if a vertical weld can be allowed, which is ground smooth and flush before spinning, and will be further smoothed out by the spinning operation, you can roll and weld a cylinder or lay out a rolled and welded cone and perform whatever deformation is necessary to achieve the required shape. In this way, one-piece orders for very large intricate parts can be economically produced by metal spinning plus fabricating.

Supercharger exhaust hood, an example of spinning plus stamping. Types 347 and 321 stainless, .093" thick. Initial breakdown preformed cold. Cone is given final drawn on stamping press.

An oil refining separator disk, spun cold in a quick draw automatic spinning roller. Haynes alloy No. 25, .096" thick, to 45° angle, 6½" deep.



← Before

After →

Above: Previous method of fastening tub ring and ring rubber to washer tub required two assemblers to manipulate special power guns in cramped working space. Here, assemblers are performing this "blind" operation.

Right: Assembler positions Whirlpool automatic washer tub ring before sliding it into place, securely fastened by one-piece S-type spring steel fasteners.

PHOTOS COURTESY TINNERMAN PRODUCTS, INC.

Simplified assembly pays big dividends

how Whirlpool saves $55,000 per year on one small phase of its washer assembly operation

FOUR S-type spring steel fasteners, designed for a particular application, eliminated an acute production line bottleneck and realized annual net savings of $55,000 in the manufacture of Whirlpool automatic washers, Whirlpool engineers report.

The fasteners, now used to retain the automatic washer tub ring and tub ring rubber to the tub, made possible a variety of production improvements and simplifications, including:

1. Replacement of 12 fastening parts (four screws, four nuts, and four washers) with just four simple, one-piece clips.
2. Eliminated assembly operation utilizing specially designed right-angle power guns.
3. Curtailed finish damage to in-production washers caused by previous fastener tightening operations.
4. Imparted more satisfactory production line balance, resulting in a smoother production flow and increased production.
5. Resultant $55,000 annual savings reflected by this use of special fasteners included savings accruing through lower material costs, less direct labor, and reduced burden.

Actually, the designing of the new S-type clip for use in retaining the tub ring and tub ring rubber was promoted by the successful use of many other similar fasteners in the assembly of the washer. Over-all, Whirlpool automatic washers utilize 36 fasteners of various types in its assembly.

Previous to the adoption of the new S-type clip, joining of the three parts was achieved by forcing each of four screws through the tub wall and ring rubber to contact fasteners mounted in the tub ring.

A special right-angle power gun was required for this operation because the screw itself punctured and penetrated the ring rubber to contact fasteners in the ring.

Blind driving of the screws was made even more difficult by a lack of working space and poor visibility of fasteners in the tub ring.

By contrast, the newly-designed fastener now used in the assembly operation makes the fastening job a simple, one-man operation requiring no special tools or tool-handling know-how.

The four clips are secured to the tub. Then the rubber ring is pushed into the clip with a tool similar to a putty knife. The tub ring is then assembled.

A simple finger motion then snaps each of the four clips into place, securely fastening the rubber to the upper edge of the tub. The rubber ring is then in position to accept the tub ring.

In the assembly operation, the tub ring is quickly snapped into place, with the detends or dimples of the

to Page 60 →

Seventy openings are pierced with one stroke in this 300-ton press in the processing of a range back.

A 100-ton press blanks and pierces oven bottom baffles. Note use of air-powered safety guard.

Look-ahead manufacturing at Odin Stove

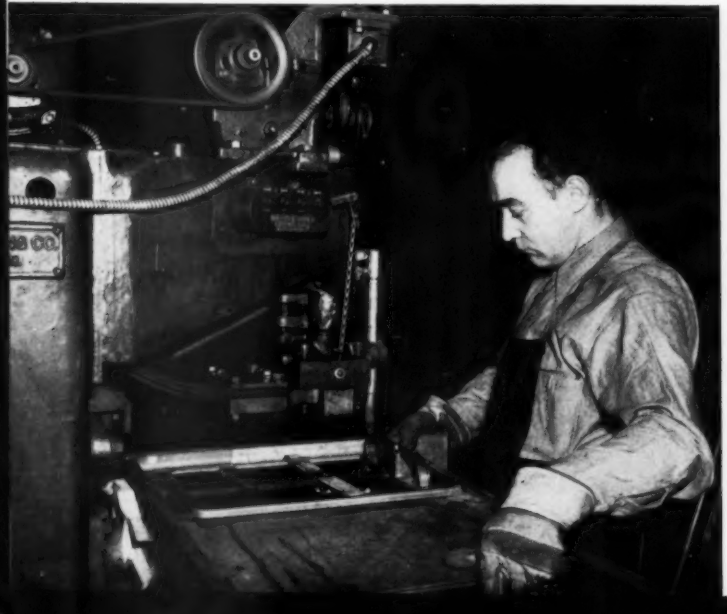
by Walter Rudolph

Odin Stove Manufacturing Co., Erie, Pa., has been in the range producing business for over half a century. After World War II, when Odin switched from making ordnance for the military back to range manufacturing, the company also switched war-acquired manufacturing techniques to fabrication of its peacetime products.

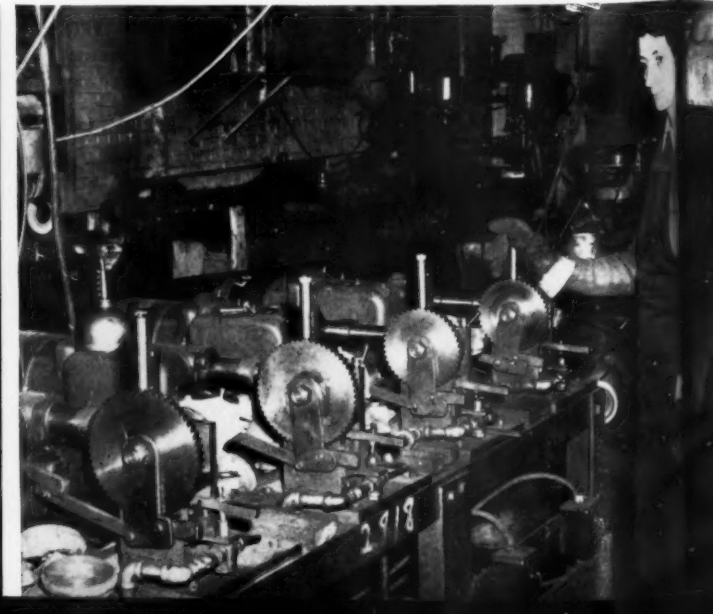
It amounted to putting precision manufacture on a mass-production scale. Today in a compactly arranged, comparatively small plant, this firm continuously develops changes in metalworking that make for a better range, produced with a minimum of manual labor.

Departmentalization is pretty well advanced, with manufacturing proceeding, roughly, from west to east in the plant, from receiving to shipping. From steel storage, through shearing, braking, press operations and welding; through a cleaning, japanning and aluminizing area, into stock (as the case may require) or

Range top gets spot-welded part for holding burner—worker clamps part in with small fixture, holds to machine.



Battery of drilling machines are specially mounted and synchronized to automatically index and drill burners after clamping

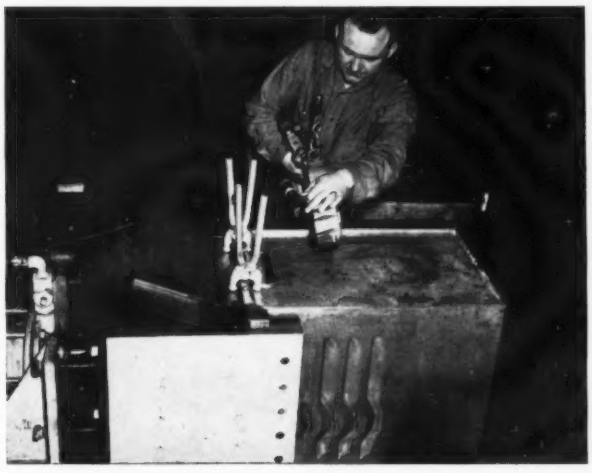


Another 100-ton press is used with a double-die arrangement to rough and finish-form drawer rails.

Odin has engineered and built many special fixtures, such as this one for piercing edges on range top.

banks along the assembly line, and finally running off the knee-level roller conveyor into the shipping area — all has been laid out to promote an easy flow of materials, parts, and the assembled ranges.

Porcelain enameling of various range components is done at a local plant; chrome plating of other parts is sent out of town in job lots; otherwise, in the late years, Odin has retooled and re-equipped for procedures that make most of the range-producing an in-plant operation.



In welding department, air-powered fixture "wraps" oven liner, holds it for welding with suspended welding gun.

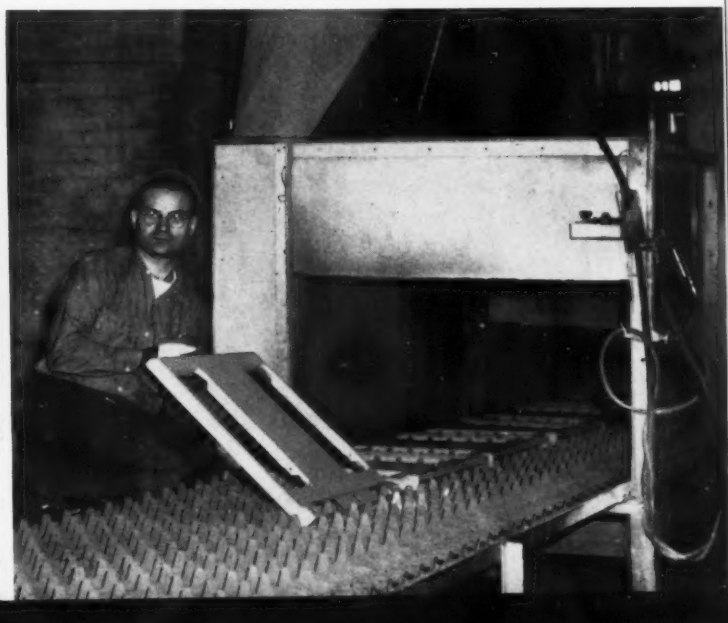
Special jigs and air-powered equipment used extensively

Odin engineers and tool-makers are especially adept at devising fixtures, jigs and dies, along with air-powered equipment, for simplifying and speeding metalworking in this plant. One of the latest in this group is a pneumatic piercing fixture. Air power clamps a 25″x38″ range top, of 16 gauge steel, in the fixture (built at about table height) and then eight small holes are pierced by air-driven

to Page 60 →

Range components leave cleaning and phosphatizing, and are hung on conveyor leading to dipping—either japanning or aluminizing.

Odin range tops leave ground coat drying tunnel at enameling plant, prior to firing in furnace.



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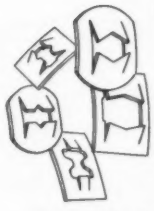

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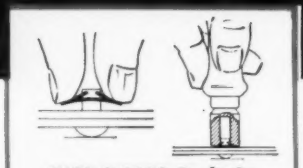

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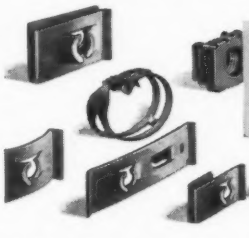

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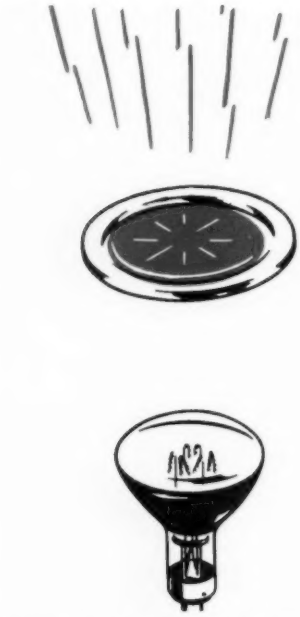
In demonstrating the fast heating qualities of the new infra-red lamp, a "tempilstick", with a melting point of 1000° F., melts in five seconds when touched to a piece of steel held a few inches over the new heating unit. This new source of heat for cooking consists of an especially tough infra-red bulb mounted beneath a translucent stove lid. Instead of conducting heat to a utensil as coils do, the bulb radiates heat to the pan through the lid which is colored red because other colors block most infra-red rays.



More than three years of exhaustive research went into the development of this new cooking unit for ranges.

"SUNLIGHT" C

for the modern ki

ONE of the most attention-getting innovations to find its way into the modern kitchen range is included in Sears and Roebuck's top line of Kenmore electric kitchen ranges manufactured by Newark Stove Company. The feature is a new "Infra-Ray" (as Sears calls it) surface unit which utilizes a recent development in high intensity-infra-red lamps. Through editorial prerogative we have chosen to refer to this innovation as "sunlight cookery."

The development of the heating unit has taken place over a period of three or more years. (The first news report was published many months ago.)

The new Sears line for 1953 marks the first practical production use of the new unit to be released to Mrs. Housewife.

Visible ray heating

Unlike the conventional heating elements, which are standard for electric ranges, the new unit is a high i tensity (1550 watts) lamp utiliz the visible rays of the spectrum. T brilliant light rays are then "filter through a heat-resisting red fil plate which "blanks out" the br liant white light and allows the he rays to penetrate to the cooki vessel.

Special glass required

Evolution in the production infra-red lamps has been toward t development of smaller, high-volta lamps capable of providing a sour for intense and instantaneous he Ordinary glass will not stand the e treme temperatures. It was ther fore necessary that a special hi heat-resisting glass (envelope) f the lamp and, in turn, a high hea resisting and thermal shock resi ing filter plate be developed. Coopera tion between lamp manufacturer a glass producer led to the developme which is now incorporated in t

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ew deluxe-type range produced at Newark Stove Company.

Produced in the plant of the glass manufacturer, the lamp envelope is shipped to the manufacturer of infra-red lamps, where it is evacuated, a metallic gold flashed on the inside, and the filaments and base installed. Metallic gold is used because it is the best material for retaining its reflectivity under the intense heat which is generated in the lamp.

The development of the special lamp for a range surface heating unit is reported as the first time that high wattage lamps have been successfully enclosed in small glass envelopes which are both capable of withstanding the extremely high heat generated while at the same time offering the required resistance to thermal shock.

While it is expected that this new type of lamp will be used in industry, in banks for drying finishes, and for other parallel industrial uses, the incorporation of the unit in a modern kitchen range for "sunlight cookery" presents an innovation which seems well worth recording.

Instant heat without contact

Some of the demonstrations for the new surface heating unit typify the characteristics of infra-red heating. For instance, water can be readily boiled in a container mounted several inches above the surface of the cooking surface or the "filter plate." Due to the characteristics of infra-red rays, instantaneous heating is provided at the click of the switch.

A typical demonstration of thermal shock resistance of the surface plate is the placing of ice cubes on the plate with the unit in the "on" position.

"Heat by radiation", a principle of the new infra-red cooking lamp featured in Sears and Roebuck's new Kenmore range, is demonstrated by Mrs. Evelyn Haynes, home economist. A dish is mounted on a tripod to show the cooking vessel receives intense heat even though several inches removed from the surface of the unit.

The range heating lamp gives off heat instantly at the flick of a switch, distributing heat evenly over the surface of the cooking vessel.

Left: "Frying ice" test demonstrates resistance to thermal shock.. Because cover plate glows softly when unit is turned on, there is always a visual indication of the heat setting.

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Summaries of ACS enamel division papers

briefs of some papers presented before Enamel Division of American Ceramic Society

AT the 55th annual meeting of the American Ceramic Society, held in New York City, April 26-30, some 17 papers were scheduled for presentation at the Enamel Division sessions. A news report of the ACS meeting was published in the June issue of *finish*.

Chemical durability study of porcelain enamels

by O. C. LINHART AND A. HONKANEN, Chicago Vitreous Enamel Product Co.

The resistance of 18 different commercial porcelain enamels to 32 corrosive, boiling solutions was determined by a loss in weight type of test similar to the voluntary trade standard recorded by the Commodity Standards Division of the National Bureau of Standards, Commercial Standards CS-100-47 for Porcelain-Enameled Steel Utensils, Paragraph 16. The porcelain enamels were selected to represent as many as possible of the different types of porcelain enamels which are in present commercial usage.

The following solutions were employed:

Acids — boric, tannic, butyric, acetic, phosphoric, citric, tartaric, lactic, malic, nitric, sulfuric, oxalic, hydrochloric.

Bases and salts — borax, ammonium hydroxide, tetrasodium pyrophosphate, 5 sodium hexametaphosphate, trisodium phosphate, sodium metasilicate, sodium hypochlorite, sodium carbonate, potassium carbonate, sodium hydroxide, sodium hyposulfite, sodium chloride.

Miscellaneous solutions — distilled water, buffer pH 7.0, buffer pH 6.3, buffer pH 7.7, castile soap, detergent A, detergent B.

A lack of correlation of the resistance of the enamels to the corrosive solutions indicated that the chemical durability of the enamels could not be reliably predicted on the basis of their resistance to just a few corrosive solutions. A limited degree of correlation was found only with respect to the weak acids employed.

By another type of test similar to Commercial Standard CS-115-44, Porcelain-Enameled Tanks for Domestic Use, Paragraph 23, Division of Trade Standards, National Bureau of Standards, the loss in inital gloss was determined after the enamels were subjected to constantly refreshed, boiling distilled water. Comparison of results obtained from the two tests revealed no definite correlation between them.

This paper was presented by O. R. Novy.

Abrasion resistance of some dry-process enamels

by W. C. SPANGENBERG, Metal & Thermit Corp.

The resistance to abrasion of some dry-process, cast iron enamels was investigated using the newly developed Porcelain Enamel Institute, "Test for Abrasion Resistance by Weight-Loss". Some modifications of the test procedure based on preliminar studies, and which were accepted by the PEI Quality Development Committee, were adopted for the investigation. The test differentiated between surface and sub-surface abrasion resistance. Data obtained on eight commercial enamels showed the general superiority of acid-resistant enamels compared with non-acid-resisting compositions. It was found that longer smelting times and small mill additions of tin oxide improved the abrasion resistance. Changes in firing treatment had little effect on this property.

The results obtained in this in-

vestigation indicate the value of this weight-loss method for determining abrasion resistance of enamels, and the desirability of further study of factors contributing to this property.

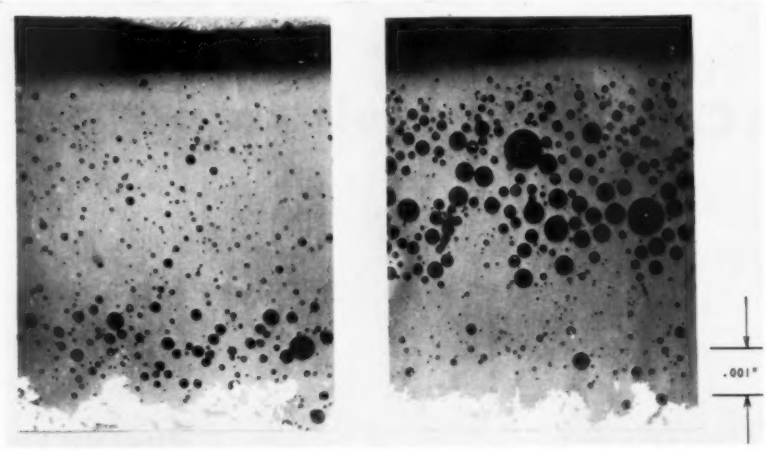
A technique for the study of bubble structure of porcelain enamels

by CLIFTON G. BERGERON, A. O. Smith Corp.

A technique was described for making angular cross sections of enameled steel in order to study the bubble structure of a porcelain enamel. This technique involved cutting a section so that the width of the glass layer was extended; allowing easier observation of bubble size and distribution.

One-eighth inch thick plates of low carbon steel were enameled and then made to fish scale by cathodic pickling, thus giving a measure of the fish scale resistance. The relative cross-sectional area and the relative volume of the bubbles were calculated from photomicrographs of polished sections of the test plates and correlated statistically with their fish-scale resistance.

Results indicated that the bubbles which were effective in inhibiting fish scale were contained, approximately, in the one mil layer of glass adjacent to the steel.



Photomicrographs taken at 100 diameters. Sample A (left) fishscaled after 107 minutes on test. Sample B (right) fishscaled after 30 minutes on test.

Leaded enamels for dry application

by ERWIN SOHN AND H. B. STEPHENSON, JR., The Eagle-Picher Company

This paper discusses leaded enamel compositions and is presented as a progress report on work done at the Eagle-Picher Research Laboratories in Joplin, Missouri. Included is a brief discussion of the dry process industry in which the desirability of a suitable lower maturity enamel of AR quality and improved hiding power is brought out.

Results obtained in four groups of enamel compositions identified as: (1) high lead oxide-titania, (2) medium lead oxide-titania, (3) antimony oxide opacified-lithium bearing, and (4) zirconium oxide opacified-lithium bearing, are presented in table form. Key compositions were subjected to a variety of tests summarized below:

1. PEI short interval citric acid — room temperature.
2. Hydrochloric acid (3 vols. water to 1 vol. concentrated acid), extended period — room temp.
3. 16 hrs. in boiling distilled water.
4. 2½ hrs. in boiling solutions of 3 and 6% anhydrous tetrasodium-pyrophosphate.

To evaluate maturing temperature an empirical method was used. This method is termed the "smoothing temperature" and is determined by applying dry enamel to a cast iron test piece and noting the temperature at which the enamel "smoothed". Similar tests were made on compositions applied wet to enameling iron.

The lead oxide-titania composition frits are clear. Opacity is developed during the firing process and is induced by using a small percentage of zircon in the raw batch or by adding a small percentage of titanium oxide in the mill. The development of opacity involves a color problem on which satisfactory progress is being made. The medium lead oxide compositions of this type have very good acid resistance, and also good resistance to boiling water for alkaline solution. Smoothing temperatures of 1300 — 1400°F. were observed for this group. Good gloss and opacity are attainable.

For the high lead oxide-titania group, smoothing temperatures within the 1250 — 1300°F. range were obtained. Some decrease in abrasion resistance and in alkali resistance was noted but good weathering resistance can be anticipated. Actual smoothing temperatures as low as 1150°F. were attained. Some of these compositions were adapted to application by wet process on enameling iron. Problems arising in the high lead oxide-titania group are now being studied. Lithium oxide in small percentages is very effective in reducing the smoothing temperature, but enamels can be made without this addition.

The antimony oxide opacified compositions are quite similar to commercial AR dry process enamels, except for the addition of a small percentage of lithium oxide. The purpose of this latter addition is to achieve a lower maturing temperature. These enamels are characterized by good gloss, a blue-white color, fair covering and adequate chemical resistance.

The zirconium oxide-opacified compositions, in particular, have very good resistance to boiling water and alkaline solution. Gloss is good, opacity fair, smoothing temperature high, and acid resistance fair. These compositions may be of interest for uses requiring good alkali and water resistance.

Lead oxide is a good flux and glass former and as such can be used as a major constituent in enamel compositions without detriment to gloss or

maturing temperature. It is felt that lead-bearing compositions offer the best approach to the development of enamels of AR quality and comparatively low maturing temperatures. Possible health hazards in production can be substantially eliminated by utilizing special lead-bearing materials.

Some properties of the system Na_2O-NaF-B_2O_3-H_2O

by BURNHAM W. KING, Battelle Memorial Institute

It was first shown that those enamel slips which have the best suspending characteristics contain equal amounts of Na_2O and B_2O_3 and at least a moderate amount of NaF.

The solubilities of mixtures of Na_2O, NaF, and B_2O_3 were then investigated. The PH of these solutions and the primary crystalline phases separating on evaporation were also determined. It was found that when the solutions were evaporated NaF was the first crystalline phase to separate from a large proportion of the mixtures investigated.

It was concluded that the desirable handling characteristics of enamels whose mill liquors contain the proper proportion of Na_2O, NaF, and B_2O_3 were not due to the formation of complex salts, but instead were due to the following combination of properties:

1. The presence of salts having a moderate solubility which changes very slightly with temperature.
2. A moderate pH of about 10 in a probably well-buffered solution.
3. NaF, a relatively stable crystalline material, as a primary phase.
4. A secondary phase which crystallizes slowly with relatively little shrinkage.

A review of studies on titanium enamels directly on steel

by A. L. FRIEDBERG, University of Illinois

This paper reviewed the variable factors that are important to successful one-coat white enameling on cold-rolled rimmed steel and some of the viewpoints adopted in approaching this developmental problem.

The successful manufacturing processing of one-coat white involves three main phases: the steel, the enamel, and the treatment of the steel before enamel. With regard to metal-treatment, the following procedure has appeared quite effective in preparing the metal for enameling:

1. cleaner-rinse
2. thiosulfate pickling; this is the 6% H_2SO_4 bath, 160°, with ½ oz./gal. of ammonium thiosulfate, 5 minutes
3. rinse
4. nickel flash (range of nickel deposit should be between .06 and .25 gms./sq.ft.)
5. after-nickel-etch; this is a return of ware to acid bath for 30 seconds or less.
6. rinse-neutralize
7. prefire; a short heat-treatment, 1500° — ½ min.

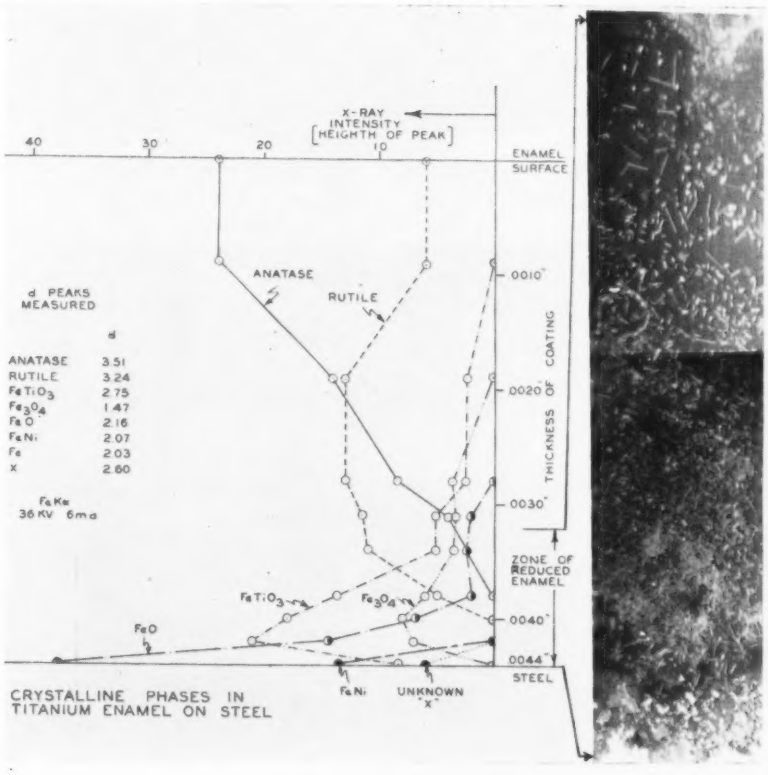
The thiosulfate pickle bath is very effective in roughening the steel surface, and does not present the undesirable odors attendant with other sulfide-containing baths.

The short etch treatment after nickel flashing benefits both bond and appearance of the fired enamel, as it appears to remove the nickel deposit not tenaciously held on the surface.

Prefiring improves the coating appearance mainly and it often increases the bond.

As crystals or glasses containing titanium are sensitive to reducing conditions, the titanium enamel directly on steel contained a black, reduced layer of enamel about .001″ thick adjacent to the steel. This has necessitated enamel thicknesses of .0035″ or greater to supply adequate and uniform coverage of titanium enamel directly on steel.

Microscopic examination also indicated the relative absence of bubble structure in the coating which is important in that fishscaling has occurred only rarely with one-coat titanium enameling. The crystalline phases present in the enamel coating were analyzed by X-ray diffraction of the enamel surface as it was



abraded away in successive steps. The crystalline phases present and their distribution in the enamel layer are shown along with a photomicrograph of the enamel cross-section (6° to plane of enamel surface, 340X).

The effect of ceramic coatings on the fatigue strength of metal

by W. J. PLANKENHORN, University of Illinois

A series of tests were conducted to determine the effect of porcelain enamels and ceramic coatings on the endurance limit and the fatigue life of ingot iron components subjected to flexure. The specimens were of the Krouse cantilever beam type. They were designed to provide a uniform bending triangle with a uniform stress throughout the test area. A completely reversed stress was applied by repeated bending in a standard motor driven fatigue testing unit.

The fatigue strength of enameling iron before and after pickling and as coated with three different ceramic coatings and with one oil-mixed paint was determined. The three ceramic coatings included a commercial ground coat and two refractory ceramic coatings.

The strain in the outer fibres of the metal, with a given deflection, was considered to be the same for both the uncoated and coated specimens. Therefore, deflection was used as a measure of the stress applied rather than the load necessary to produce such a deflection.

An endurance limit of 24,000 psi was determined for the enameling iron after polishing with 2/0 emery cloth. Pickling with sulphuric acid, containing ammonium thiosulphate, reduced the endurance limit to 23,000 psi. This reduction in fatigue strength was attributed to stress-raiser pits produced by selective etching of the metal during pickling.

Painting did not improve the fatigue strength of the pickled metal though there was an overall increase in specimen thickness of 0.002 in.

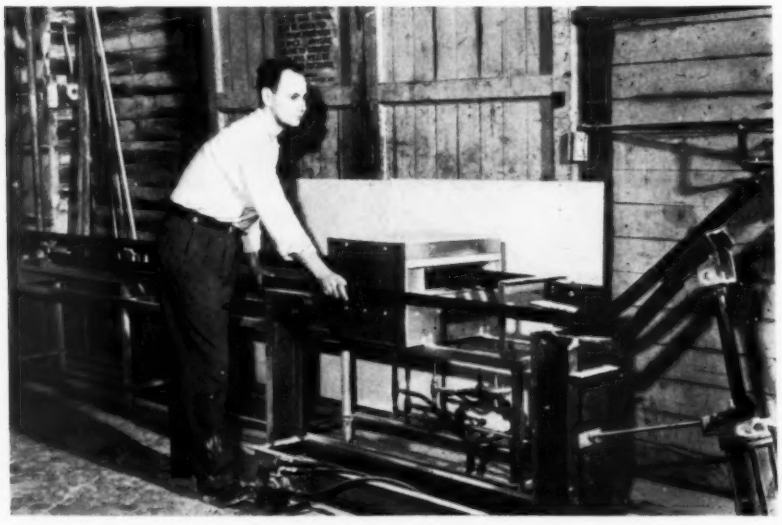
The application of a commercial ground coat caused a noticeable increase in fatigue strength to 27,500 psi. A still greater improvement was noted when specimens were coated with University of Illinois Refractory Coatings No. 32-22 and No. 285-1, increasing the endurance limit to 29,500 and 32,000 psi respectively. There was a strong tendency for the coated specimens to break at or partially within the clamp area. The actual stresses causing failure were therefore greater than the stresses applied by flexure by some unknown factor which was dependent upon the clamping arrangement.

The improvement in the endurance limit and the fatigue lift at stresses above the endurance limit, of the coated metal, was considered to be quite significant. It was attributed to the ability of the coating to absorb and re-distribute some of the stresses and to pre-stressing resulting from the differences in expansion or contraction between the metal and the coating.

Special machine for bending glass-coated pipe

BARROWS Porcelain Enamel Co., Cincinnati, has added another piece of specially-designed equipment for use in the production of glass-lined steel pipe.

The new air-operated hydraulic machine bends a length of "flux" pipe to 45° after it has been glass-coated inside and out. Prior to bending, the pipe is spot heated to 1500° F. in a small furnace shown in the background of the accompanying photo. Pipe can be handled immediately after heating.



In addition to the pipe bending apparatus, Barrows has also designed and placed in operation a special pipe dipping machine and drying unit (*February 1953* finish), and a pipe fusing furnace (*September 1952* finish). All are designed to handle the application of glass coatings to pipe in lengths up to 21 feet, and in diameters up to three inches.

Bulk of the coated pipes produced has been for such expendable purposes as fluxing pipe for the aluminum industry and heat exchanger tubes.

New uses for glass coatings

Barrows anticipates that improvements in the application of the glass coating resulting from the use of the new equipment will open new uses in chemical processing, petroleum, and paper industries as well as in salt water cooling applications, or wherever corrosion or high temperature problems are severe. The equipment has already been used to apply high temperature ceramic coating to stainless steel pipe.

ADS OUT

Factors that influence the adherence of paint films

a two-part article on factors—other than surface preparation—influencing adherence

PART II

by Edward G. Bobalek • *ASSOCIATE PROFESSOR OF CHEMISTRY, CASE INSTITUTE OF TECHNOLOGY, CLEVELAND, OHIO.*

ADHERENCE of paint films to metal can be affected by a number of variables other than surface preparation. Frequently, failures in adherence are manifested only indirectly by faults such as brittleness of the film, or in inferior corrosion protection. The volatility and solvency characteristics of the thinner (as pointed out in Part I) can have significant effects on adherence in paints based either on thermoplastic or thermosetting resins.

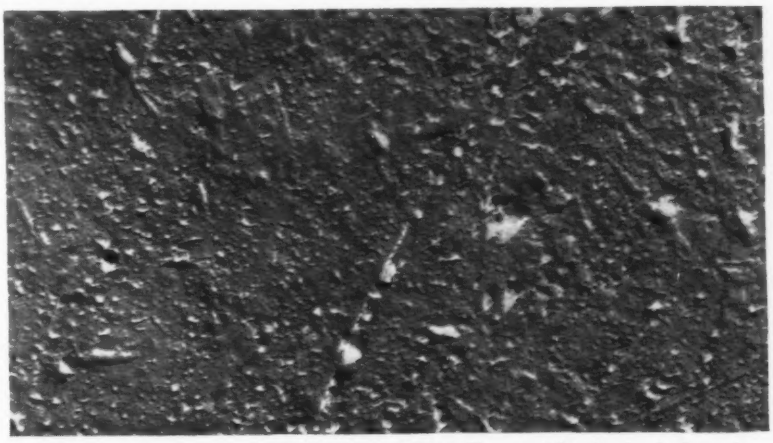
Spreading characteristics of paint films

Liquids on surfaces tend either to collect into droplets or to spread indefinitely over the surface being wetted. This feature in paints is controlled to a very great extent by the choice of solvents, and the paint film can change its characteristics in this respect when the solvent evaporates.

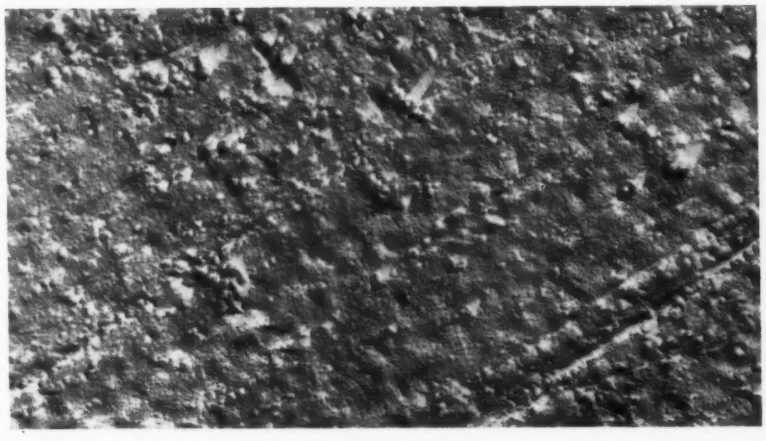
Sometimes it is a problem to maintain this wetting or adhesion of the film for the substrate after the solvent which originally promoted the effect has vaporized. This may require the use of non-volatile, adhesion promoting, additives which are retained in the film and increase the forces of chemical attraction between the substrate and organic film interface.

As examples of some successful manipulations of this kind, we can cite the addition of traces of melamine resins to nitrocellulose lacquers, acrylic resins to vinyl lacquers, traces of Ethocel or polyvinylalcohol to certain curing resins of the phenolic type. Sometimes it is necessary that one of the resins in the film has a high acid value, or it may be possible to help particular situations by additions of trace quantities of acids such as malic, lactic, or phosphoric.

All of these expedients are again a part of the trade art of a successful formulator, and over these the paint



Electron microscope view (at about 10000 X magnification) of chromium-shadowed replicas of the underside (adherant interface) of white, alkyd-enamel films stripped electrolytically from a tin plate surface. The bottom photograph shows the characteristics of the films that are more adherant and hence more difficult to strip from the metal. Note the lesser roughness of the more adherant surface. Differences of this kind can be caused by conditions of the metal surfaces or by other factors discussed in this article.



user has very little control. In as far as the paint user is concerned, only one feature is really important. Where the adhesion properties of the film are thus adjusted, it may be that the adjustment is not permanent. The additives which convert a poorly adherent paint to one more adherent are added ordinarily in very small quantities, and these trace additives can be lost for a variety of reasons during aging of the paint.

For example, acids can be neutralized by esterification with alcohols, or by reaction with basic pigments, or with the metal container. Traces of the adhesion-promoting resinous additives can be removed from solution by adsorption on the pigment, or they can be otherwise inactivated by chemical reaction with the other resins in the paint vehicle or with the thinners. These effects are slow, sometimes requiring days or months at room temperature storage. However, where this loss of activity is possible, then care must be exercised in the inventory or production lots of paint. It is prudent that special care be taken that the first material into inventory should be first out into the paint shop.

All instances of loss of adherence properties on aging of the paint cannot be explained as a loss of wetting properties of the film. Some resins that have a high attraction for surfaces—even in the absence of solvent —have a tendency to react in the package to produce higher molecular weight and more viscous materials. This increase of viscosity may not be obvious in the presence of a great deal of thinner in the original paint package. However, when the solvent evaporates during film formation, the film thickens and loses fluidity much more rapidly than would have been the case with fresh paint. This premature thickening interferes with the flow-out, and the paint film bridges rather than fills roughness gaps in the surface being coated. This same condition favors solvent retention which sometimes maintains the film in a condition where it can be damaged by water for extensive periods of time after the paint has been applied. This results in adherence failure or in effects that resemble adherence failure. The remedy for this cause is again good inventory control. It is unfortunate that some of our best protective lacquers and enamels are exactly the ones which are most prone to lose adherence properties during excessive aging in storage.

Conditions of curing for thermosetting resin coatings

The initial stage of the chemical reaction that cures thermosetting resins or mixtures of reactive resins is such as to increase the average molecular weight by linear extension of the molecules. During this process the film thickens and gels, and may become quite firm. At this stage, however, it is susceptible yet to attack by solvents and has not achieved optimum properties of chemical resistance.

The latter stage of curing involves branching and cross-linking of the molecules. During this stage the film rapidly develops resistance to solvents and corrosive chemicals. Ordinarily during this last stage of curing, the film begins to shrink more extensively, and stresses are set up at the film-metal interface that tend to degrade adhesion. Also, the cohesive forces within the resinous film increase and the adhesive forces to the substrate tend to decrease. This is aggravated greatly by the tendency for the film to shrink and pull out of the rough structure of the metal surface.

Proper curing conditions are such as will make the film chemically-resistant with minimum sacrifice of adherence. That is the films should be cured no more than necessary to achieve the required resistance to solvents, water and chemicals.

Over-curing can be caused by increasing baking temperatures or baking time, or by increasing quantities of curing catalysts. These manipulations are sometimes tempting since they increase production rates. Where

to Page 61 →

Harold Massey, assistant managing director of GAMA, discusses program details with T. D. Bromley (left), newly elected chairman of GAMA's direct heating equipment division, and Paul F. Neess (right), past chairman of the automatic controls division.

GAMA men warned of "operation blindfold"

a blueprint of action for the gas industry development program presented at annual meeting of Gas Appliance Manufacturers Association

AT the 18th annual meeting of the Gas Appliance Manufacturers Association, H. Leigh Whitelaw, GAMA managing director, told a record attendance of 400 delegates that is is impossible for any manufacturer to meet competition unless he is armed with a store of facts equal to that of his competition.

Pinpoint distribution

By utilizing uniform trading area statistics, Whitelaw pointed out, competitive industries "have been able to pinpoint their distribution. Because they knew individual markets and knew the ability of each of these markets to absorb their product, they were in a position to develop sales and promotional programs which could only culminate in an adequate sales volume accomplished within each area."

"In this highly competitive economy we are entering," he stated, "*operating blindly will become increasingly hazardous.*" He urged all manufacturers to adopt the uniform trading area system of reporting sales so that all may benefit from the GAMA program which supplies members with industry sales figures on a trading area basis to provide the basic information necessary to the establishment of market potentials and sales quotas.

Whitelaw said that universal adoption of the trading area report program would be a most important complement to the work of the Gas Industry Development Committees of GAMA and the American Gas Association since the facts and figures would enable manufacturers and utilities both to plan and budget intelligently for advertising, sales promotion, sales expense, dealer cooperation, allocation of sales territories, and evaluation of sales performance.

A blueprint for action

Delegates to the meeting were presented with a blueprint for action to achieve the aims of the recently-announced Gas Industry Development Program. James F. Donnelly, GAMA president and vice president

New GAMA Officers
(to take office in October)

President: Sheldon Coleman, president, The Coleman Company, Inc., Wichita, Kansas

1st Vice Pres.: T. T. Arden, executive vice president, Grayson Controls Division, Robertshaw-Fulton Controls Co., Lynwood, Calif.

2nd Vice Pres.: W. F. Rockwell, Jr., president, Rockwell Manufacturing Co., Pittsburgh, Pa.

Treasurer: Lyle C. Harvey, president and general manager, Affiliated Gas Equipment, Inc., Cleveland, O.

(Division Officers on Page 44)

Left: Sheldon Coleman (left), president-elect of GAMA, and T. T. Arden, (right), vice-president-elect, looked on with interest as GAMA president James F. Donnelly, of Servel called the board of directors meeting to order. The meeting was held at the Greenbrier, White Sulphur Springs, W. Vir.

Right: Some of speakers at president's din l. to r., Frank C. Smith, AGA president; Shel Coleman, GAMA president-elect; Louis Ruth berg; GAMA past president; H. Carl Wolf, A managing director; W. F. Rockwell, Jr., GAMA v.p.-elect; John A. Robertshaw, of Robertsha Fulton; and H. Leigh Whitelaw, GAMA manag director.

of Servel, Inc., stated that the program had been planned to take advantage of the opportunities and to solve the problems which have arisen from the unprecedented growth of the gas industry during the past ten years.

The program includes strong recommendations for each manufacturer and utility company covering a variety of subjects, including market potentials, sales training, sales promotion, financing facilities, product development, appliance service, installation and safety. It is sponsored by both GAMA and the American Gas Association.

Need cooperation, communication between manufacturers, utilities

Donnelly then stressed the importance of effective cooperation and communication between manufacturers and utility companies. "What each individual gas utility is going to do about those portions of the program directed to them is of prime importance to us, both as individual manufacturers and as an industry. The implementation of each utility's acceptance of this program must be made available to us before we can successfully implement our own phases of the program. I also urge that, as we progress, we advise the gas utilities of what we as individual manufacturers are doing," concluded Donnelly.

Interdependence stressed

Frank C. Smith, AGA president and president of Houston Natural Gas Co., also stressed the interdependence of the gas appliance and gas utility industries. "It is a fundamental truth that yours cannot be a healthy industry without the active interest and support of ours; and that our industry is able, modern, sound, aggressive and efficient."

Smith urged widespread participation by manufacturers in industry-wide promotion campaigns, and also emphasized the importance of adequate advertising and promotion of individual products and product features.

Need better sales outlts

He said that no industry advertising program could take the place of strong individual campaigns by manufacturers. However, he added, "advertising of any kind isn't going to sell anything — even the most meritorious product — unless there is a sales outlet to which the product has been distributed . . . and unless there is a salesman to sell it. The best local and the best national and regional advertising and promotion aren't going to do the job without sales outlets and salesmen. There must be more and better sales outlets, and they must be manned by trained, convinced, amply rewarded salesmen."

Quality vs. cut-price

Lyle C. Harvey, president of Affiliated Gas Equipment, Inc., said that gas appliance manufacturers should concentrate on selling quality to combat cut-price promotion. He also urged whole-hearted backing of the Gas Industry Development Program.

"Too many of us blame the utilities for all of our troubles. To listen to some of us, one would think we feel that the utilities should buy our output at a price 10 per cent to 25 per cent higher than we can sell the stuff ourselves — and give us shipping schedules exactly equal to our production possibilities."

Smith urged that a selling program be based upon the quality of the ap-

Looking over the convention program are W. A. Raub, of E. F. Griffiths Co.; and W. T. Trueblood, Jr., of Magic Chef, Inc.

Julius Klein, left, president of Caloric Stove, receives a meritorious service from James F. Donnelly, president of GAMA. The award was one of 19 presented at the meeting.

pliance, the services it renders and the fact that it is priced fairly. He added that there should be a sufficient profit margin for promotion and selling effort.

Market analysis — and sales

A. F. Smith, manager of A. O. Smith Corp.'s market research department, and vice chairman of GAMA's general marketing committee, told the convention that scientific market analysis can help manufacturers to "improve salesmen's performance, to find out where to sell more products and to cut selling expenses."

He pointed out that many manufacturers are now using a uniform trading area reporting system which makes it possible for each company to check its sales performance against the industry total on an area-by-area basis.

"Over a period of years," he added, "they can trace the industry's and their own progress in a specific area or any combination of them. . . . Advertising programs, sales training, meetings for distributors and dealers, long-term growth trends, warehouse locations, financing programs — all of these can be more intelligently managed by a manufacturer who has the figures at his disposal."

Laboratories tests up 62%

H. Carl Wolf, AGA managing director, reported that a spectacular rise in the number of products submitted for approval by the AGA Laboratories has created a serious problem. He said that requests for tests of central heating appliances were up 62 per cent in the first 16 weeks of 1953 over the same 1952 period, and that requests for water heater tests have increased 110 per cent in the past year. "In spite of doubling our staff of engineers on the job, we are still over six months behind," Wolf said.

The toughest problems to lick quickly, he said, are the shortage of space and personnel. To overcome the difficulties, two shifts are being operated in the Cleveland laboratory, and 11 college boys who will be available during the summer vacation are being trained on Saturdays.

Wolf urged the formation of a GAMA committee—representative of its major divisions — to study the laboratory situation and to make recommendations and suggestions for improvement.

Convention harmony tidbits were presented by Harold L. Walker, Detroit Controls; Edward A. Norman, Jr., Norman Products; E. Carl Sorby, Roper; Elliott Taylor, American Gas Journal; and Irving Seith, Forest City Foundries.

GAMA honors 19 members with service awards

The Gas Appliance Manufacturers Association honored nineteen of its members with meritorious service awards for "outstanding service to the gas industry". James F. Donnelly, GAMA president, presented the awards at the traditional "president's dinner".

Louis Ruthenberg, chairman of the board of Servel, Inc., Evansville, Ind., headed the list of those honored. He was presented with an award for his "quality of leadership and ability as president of GAMA from 1951 to 1952."

Others who received the merit awards included:

E. Carl Sorby, vice president of Geo. D. Roper Corp., Rockford, Ill., as past chairman of the domestic gas range division;

J. P. Hutchinson, sales manager of National Steel Construction Co., Inc., of Indiana, Logansport, Ind., past chairman of the gas water heater division;

H. B. Carbon, vice president in charge of sales of Bastian-Morley Co., Inc., of La Porte, Ind., past chairman of the gas boiler group;

Clarence Coleman, vice president of The Coleman Company, Inc., Wichita, Kans., past chairman of the gas floor furnace group;

F. A. Kaiser, vice president of Detroit-Michigan Stove Co., Detroit, past chairman of the hotel, restaurant and commercial gas equipment division;

Lee W. Rasch, vice president of Rasch Manufacturing Corp., Kansas City, Mo., past chairman of the gas furnace group;

W. E. Davis, assistant general sales manager of Roberts-Gordon Appliance Corp., Buffalo, N.Y., past chairman of the gas conversion burner group;

Gordon Rieley, general manager of Lennox Furnace Co., Columbus, O., past chairman of the gas house heating and air conditioning equipment division;

A. M. Buxton, assistant general sales manager of Cooper-Bessemer Corp., Mt. Vernon, O., past chairman of the gas engine compressor division;

Harry E. Thompson, vice president and chief engineer of Ohio Foundry & Manufacturing Co., Steubenville, O., past chairman of the manufacturer members of the joint GAMA-American Gas Association sub-committee on approval requirements for gas-fired room heaters;

R. B. Myers of Lovell Manufacturing Co., Erie, Pa., past chairman of the gas clothes dryer division;

Julius Klein, president of Caloric Stove Corp., Philadelphia, past chairman of the "CP" manufacturers group of the domestic gas range division;

William A. Raub, vice president of E. F. Griffiths Co., Philadelphia, past chairman of the gas meter and regulator division;

Paul F. Neess, manager of the sales and engineering department of Perfex Corp., Milwaukee, past chairman of the automatic controls division;

Frank J. Nunlist, vice president and sales manager of L. J. Mueller Furnace Co., Milwaukee, past chairman of the manufacturer members of the joint GAMA-American Gas Association sub-committee on approval requirements for central heating equipment;

Charles Mayer, director of research for The Tappan Stove Co., Mansfield, O., past chairman of the manufacturer members of the joint GAMA-AGA sub-committee on approval requirements for domestic gas ranges;

J. G. Dierkes, general manager of Bowser, Inc., Cairo, Ill., past chairman of the gas incinerator division;

L. T. Tegler, assistant chief engineer of A. O. Smith Corp., Kankakee, Ill., past chairman of the manufacturer members of the joint GAMA-AGA sub-committee on approval requirements for gas water heaters.

New Officers of GAMA Divisions

Officers of Gas Appliance Manufacturers Association divisions, chairmen of which automatically become members of the board of directors:

Domestic range: W. T. Trueblood, Jr., Magic Chef, Inc., *chairman;* E. Carl Sorby, Geo. D. Roper Corp., *vice chairman;* and James Manning, Florence Stove Co.; Julius Klein, Caloric Stove Corp.; Harold Jalass, Cribben & Sexton Co.; F. A. Kaiser, Detroit-Michigan Stove Co.; S. B. Rymer, Jr., Dixie Products, Inc.; Cecil M. Dunn, RCA-Estate Appliance Corp.; O. E. Loberg, Gurney Products, Ltd.; H. L. Clary, Norge Division of Borg-Warner Corp.; A. B. Ritzenthaler, The Tappan Stove Co.; G. E. Mumma, The Sunray Stove Co.; Henry Honer, Western Stove Co.; and James Rasmussen, Perfection Stove Co., members of the executive committee.

House heating and air conditioning equipment: Harold C. Day, American Radiator and Standard Sanitary Corp., *chairman;* Clarence Coleman, The Coleman Co., vice chairman; and E. A. Norman, Jr., Norman Products Co., executive committee member.

Water heater: H. B. Carbon, Bastian-Morley Co., *chairman;* Lee W. Rasch, Rasch Manufacturing Corp., *vice chairman;* and J. P. Hutchinson, National Steel Construction Co., executive committee member.

Clothes dryer: John Christensen, Hamilton Manufacturing Co., *chairman;* Don H. Davidson, Whirlpool Corp., executive committee member.

Meter and regulator: Gilbert T. Bowman, Nordstrom Valve Division of Rockwell Manufacturing Co., *chairman;* E. B. Cutter, Jr., American Meter Co., *vice chairman;* and W. A. Raub, E. F. Griffiths Co., executive committee member.

Incinerator: Robert D. Smith, Incinerator Products Co., *chairman;* Harry Martens, Calcinator Corp., *vice chairman;* and T. H. Landgraf, Autogas Co., executive committee member.

Valve: D. E. DuPerow, Lincoln Brass Works, Inc., *chairman;* F. W. Schmidt, Roberts Brass Manufacturing Co., *vice chairman;* and W. D. Wildern, Detroit Brass and Malleable Co., executive committee member.

Automatic controls: Frank H. Post, American Thermometer Division, Robertshaw-Fulton Controls Co., *chairman;* Karl W. Schick, Gas Division of Minneapolis-Honeywell Regulator Co., *vice chairman;* E. B. Maire, Penn Controls, Inc.; and Harold L. Walker, Heating Controls Division of Detroit Controls Corp., executive committee members.

Direct heating equipment: Thomas D. Bromley, Peerless Manufacturing Corp., *chairman;* Robert H. Norris, Dearborn Stove Co., *vice chairman;* F. Donald Hart, Temco, Inc.; T. R. Bridges, Williams Radiator Co.; and David R. Webster, Reznor Manufacturing Co., executive committee members.

Relief valve: George B. Horne, Watts Regulator Co., *chairman;* E. F. Kurtz, Spencer Thermostat Division of Metals and Controls Corp., *vice chairman;* and Dean E. Madden, A. W. Cash Valve Manufacturing Corp., executive committee member.

Industrial equipment: F. C. Schaefer, American Gas Furnace Co., *chairman;* J. H. Sands, Eclipse Fuel Engineering Co., *vice chairman;* and D. A. Campbell, Eclipse Fuel Engineering Co., executive committee member.

Hotel, restaurant, commercial equipment: Wendell M. Smock, Vulcan-Hart Manufacturing Co., *chairman;* Delbert M. Pitman, J. C. Pitman & Sons, Inc., *vice chairman;* and F. A. Kaiser, Detroit-Michigan Stove Co., executive committee member.

Appliance regulator: Frank J. Kern, Jr., Detroit Regulator Co., *chairman;* Walter Lee, Jr., Thermac Co., *vice chairman;* and Fred Welden, General Controls Co., executive committee member.

New Officers of GAMA Groups

Gas boiler: N. E. Westphal, Weil-McLain Co., *chairman;* A. F. Westerfield, U. S. Radiator Corp., *vice chairman;* and L. N. Hunter, The National Radiator Co., executive committee member.

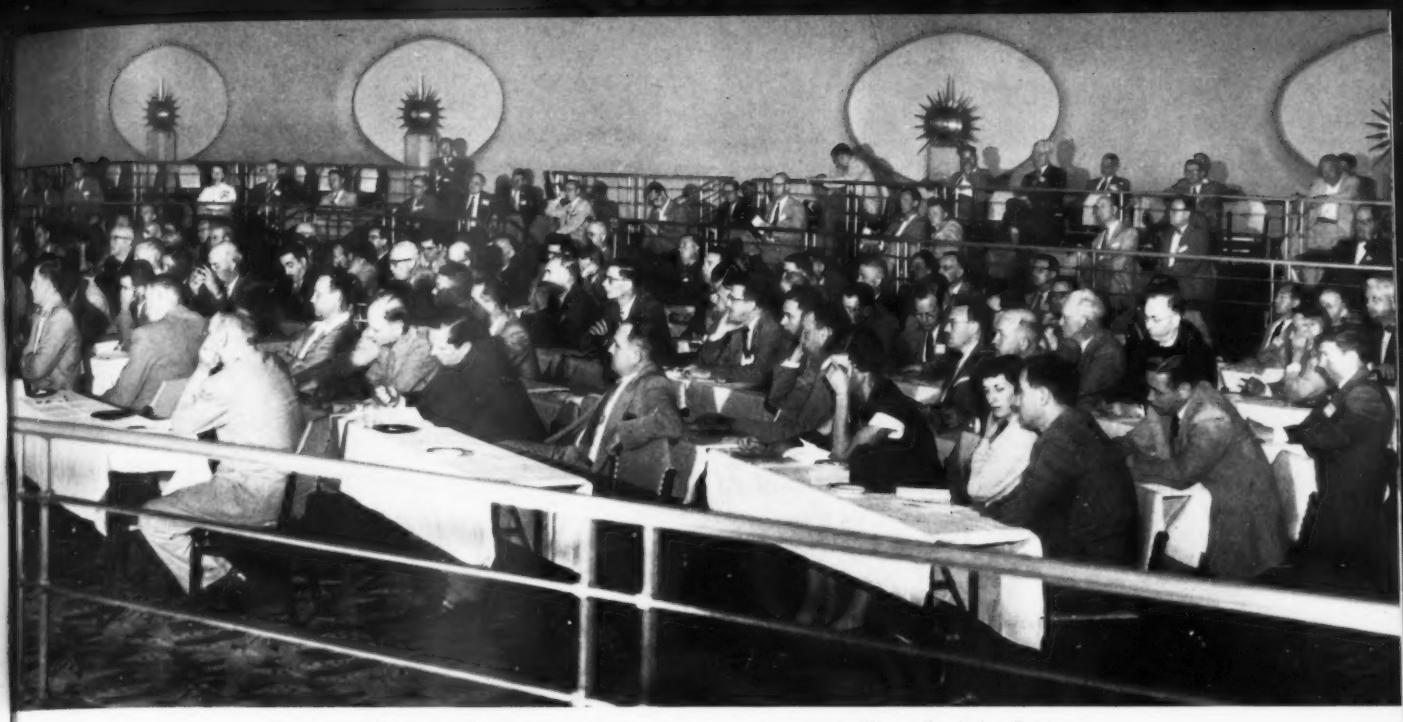
Furnace: Herbert G. Hayes, Armstrong Furnace Co., *chairman;* G. W. Denges, The Williamson Heater Co., *vice chairman;* and George E. Hochstein, The Heil Co., executive committee member.

Floor furnace: F. D. Hart, Temco, Inc., *chairman;* Russell Jarrett, Ward Heater Co., *vice chairman;* and Clarence Coleman, The Coleman Co., executive committee member.

Vented recessed heater: A. J. Horn, Day & Night Division of Affiliated Gas Equipment, Inc., *chairman;* F. A. Ryder, U. S. Machine Division of Stewart-Warner Corp., *vice chairman;* and Clarence Coleman, The Coleman Co., executive committee member.

Unit heater: D. R. Webster, Reznor Manufacturing Co., *temporary chairman.*

Conversion burner: Harry Gurney, Surface Combustion Corp., *chairman;* E. P. Hayes, C. A. Olsen Manufacturing Co., *vice chairman;* and Arnold A. Muenzer, Columbia Burner Co., executive committee member.



Stove manufacturers listen attentively as one expert presents his outlook for business.

ADS OUT

Stove business—up or down

sales trends, economic forecasting, diversification vs. simplified lines, and long range objectives form part of ICHAM program for annual meeting

(illustrated with finishfotos)

INDUSTRY spokesmen, sales executives and economists, speaking before the 21st annual meeting of the Institute of Cooking and Heating Appliance Manufacturers, in Cincinnati, June 1-3, told their attentive audience that the current boom—the third since World War II—seems to have lost some of its momentum, and that it was up to wise management to keep individual companies on the topside of the boom as it levels off.

Manufacturers need three plans

Speaking before the general session, Cecil M. Dunn, ICHAM president and president of RCA-Estate Appliance Corp., said that the industry's future can remain bright if the planning is sound. He suggested that each manufacturer develop three plans. The first is a long range objective plan—three to four years from now. Second is a medium plan—what to accomplish this year. The third is the immediate plan—what to do this month. The three plans should be tied together with a sound budget and program.

To stifle the thoughts of some managements that only the big succeed, Dunn suggested that his fellow manufacturers take time to reflect on activities of other stove companies which have come a long way in the past 10-15 years. He cited a few, including Tappan, Coleman and Sunray.

The size of any company depends upon the capital they want to risk. It is OK for a company to be small by design, but if it is small by accident, then it's disastrous, warned Dunn.

Business isn't going to hell—just through it

Robert A. Whitney, president of National Sales Executives, Inc., ventured the opinion that business in this country "isn't going to hell—it's just going through it."

There is no reason for firms in the appliance business to fear a depression if they get out and sell, asserted Whitney, who added that he personally felt the cause of the depression in the 1930's was due to a lack of selling. "People weren't buying because nobody was selling."

Revolution in marketing

Whitney referred also to a revolution in marketing whereby goods are

Cecil M. Dunn (left), ICHAM president, discussed current industry trends with Walter Muhlbach, past president.

F. H. Guthrie, Newark Stove; Paul E. Anderson, Sylvania Electric; and J. R. Wright, Moffats.

E. B. Kaufman, Boston Stove; W. J. Walkoe and F. T. Astrella, Pyramid Mouldings; Chas. Glassman, Boston Stove.

pre-sold by promotion and advertising. In this marketing revolution, salesmen must find ways of turning people into customers. He also stressed the fact that appliance companies must realize that people buy from whom they like, and that "Americans don't buy—they like to be sold."

He also urged the stove manufacturers to aim their promotion and advertising to appeal to the 17 to 19-year-old girl in their advertising—as people are getting married today at an earlier age.

Tremendous market open

Whitney cited population increases, changes in living habits, etc. for tremendous potential sales of appliance and other products.

He brought out the following figures: a 22% increase in population in the past 10 years—larger than Canada and Australia combined . . . . people living 9-12 years longer than 50 years ago . . . . children 2-3 inches taller than 50 years ago . . . .

EXCLUSIVE FINISHFOTOS O

presenting leading stove men as they w
tors report a keen interest in "wh

E. W. Pickett, Gen. Steel Wares; M. B. Gault, Robertshaw-Fulton; H. A. Moir and M. H. Cody, Gen. Steel Wares; W. D. Mastin, M. F. Grace, Robertshaw-Fulton.

Bob Wilhite, Bob Caldwell, Tennessee Stove; Paul Lux, Jack Krut, Lux Clock; and H. G. Mitchell, Canadian G-E.

R. T. Hlavin, Detroit Brass; W. E. Friend, Milburn Dick, Wrought Iron Range; and J. S. Gabry, Detroit Brass.

R. E. Brown, Owens-Corning; Harry Holbrook, Universal; and "photographer" Whit Kuenn, Owens-Corning.

H. A. Stickland, Hotpoint; E. E. Griger, Tinnerman; W. R. McDowell, Hotpoint; J. W. Seibert, Borg-Warner; and B. H. Melton, Norge.

S STOVE INDUSTRY EXHIBIT

s they're displays of industry suppliers; exhibi-in "wh w" for heating, cooking appliances

A. W. Hackman, W. J. Worden, Ferro Electric; M. L. Maier, Monarch; W. R. Seeley, Ferro Elec.; W. R. Mabee, Tappan; J. K. Owens, Eagle; D. S. Sharp, Tappan; H. F. Bond (seated), T & K; C. M. White, Welbilt.

140 million people moved in the past 10 years, with 11 million moving across county lines in the past year alone . . . . 50% of dwellings over 35 years old, with new dwellings shrinking in size. All this represents a tremendous potential market for new appliances, stated Whitney.

Range industry must present new features to homemakers

H. L. Clary, of Norge Division of Borg-Warner Corp., presiding over a session of the Electric Range Division, stated that the range industry has not kept up with other industries in presenting new features for the homemaker. He pointed out that competition for the homemaker's dollar was more from the growing TV and air conditioning industries than from fellow range manufacturers.

M. E. Skinner, of Union Electric Co., St. Louis, suggested that stove manufacturers should follow four steps: (1) build a good product, (2) establish a channel of distribution,

E. R. Grigg, Moffats, H. G. Mitchell, Canadian G-E; W. C. Duster, General Electric; and J. R. Wright, Moffats.

H. M. Reeves, Florence Stove; J. B. Mathis, Quaker; J. L. Gorey, Rhodes, M. W. Preston, Florence Stove.

H. J. Moss, Chas. Waltman, S. B. Rymer, Jr., Dixie Products; R. F. Hefferan, Jervis; Robert Rymer, Dixie; and Loyd Lee, Jervis.

E. E. Bausman, L. S. Richardson, Newark Stove; Melvin D. Verson, Emmet J. O'Connell, Verson Allsteel Press.

remembering that the installation and service men are very important; (3) devise integrated promotion and sales program, and energize the dealer, distributor and salesmen; and (4) be prepared to overcome obstacles and devise detours.

He also pointed out that too many salesmen use price as a crutch when they should be selling quality.

Why firms go out of business

F. H. Guthrie, president of Newark Stove Co., asserted that too many firms don't take time to put in a cost program. "Sixty per cent of firms operating today don't know what it costs, and only about 20% of our firms have an operating budget," he stated. He then stressed the necessity of small firms knowing their direct labor costs. "Let the foremen and supervisors run the company", he suggested, adding that the supervisory personnel should set up their own departmental budgets.

Guthrie mentioned that a recent survey showed that 51 stove companies have gone out of business since 1946. He ventured that in some instances these companies probably "didn't know what it cost", and in other instances perhaps an ambitious management had over-expanded.

C. P. Stewart, A. C. Hasse, American Nickeloid; C. D. Allison, Dearborn Stove; and John Pomatto, Nickeloid.

Fill the customer's needs— not her wants

W. R. Milby, of The Detroit Edison Co., suggested to the appliance executives that they "build new

finishfotos

Leon Clancy, G. E. Ammerman, C. M. Campbell, Murray; N. P. Norlie and S. A. Wood, Wilbur B. Driver Co.

V. C. Jones, Hart; Bert Nagy, Gray & Dudley; A. E. Dusseau, Hart; C. E. Feldkircher, Feldkircher Wire; F. E. Barranco, Ha

M. R. Hoover, Lancaster; D. F. Jones, Duo-Therm; J. H. Nagelberg, Cribben & Sexton; Dr. R. K. Fox, E. A. Work, R. G. Alexander, Lancaster Lens.

Paul Metz, Thomas Gibson, Globe American; Al Zagorniak, Maytag; F. D. Fisher and C. J. Kipp, Configured Tube Products

ranges to fill the customer's need, and not necessarily her wants."

Current boom tapering off?

Martin R. Gainsbrugh, chief economist, National Industrial Conference Board, told the general session audience that "The boom that began at the end of the steel strike has evidently lost some of its momentum."

"Figures that have become available over the past several weeks seem to put business at dead-center, with offsetting trends appearing within durables and non-durables production, retail trade, and personal income. In durables output, further rises in automotive production has been accompanied by a cutback in household goods such as laundry machines, refrigerators, ironers and television sets . . . . Retail trade has also given some indication of flattening out . . . . Personal income, too, has behaved somewhat unresponsively since the beginning of the year. . . . Commodity prices have been creeping up, but are still below their levels of mid March. . . . Finally, the condition of world markets, particularly for non-ferrous metals and many manufactured goods, including machinery, has weakened further, and downward pressures on prices have been intense."

Sees continued good business

Gainsbrugh predicted that business would continue in a healthy condition, but stressed that business, labor and government must find ways to work together in order to assure an

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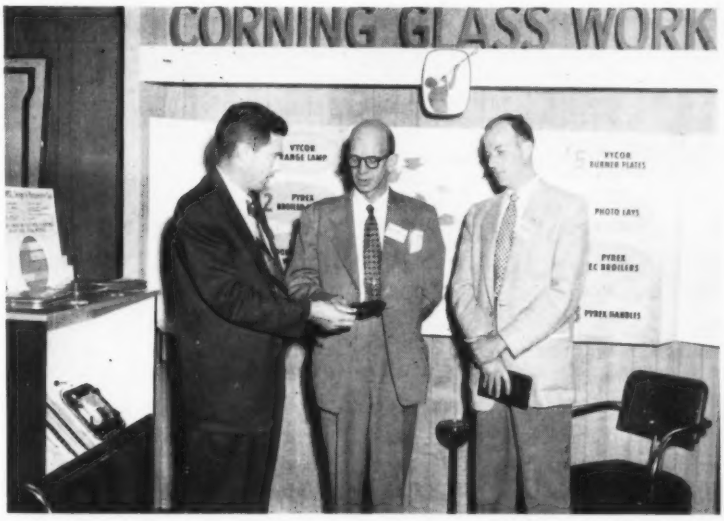


Dan Lammon, Corning Glass; A. G. Salmi, Geo. D. Roper Corp; and R. E. Ainsworth, Corning Glass.

finishfotos

J. L. Tourtelot, mfrs. agent; John C. Mevius, Proctor Electric; and J. P. Fath, RCA-Estate Appliance.

Howard Bourner, Temco; G. E. Batzel and E. O. Robson, Midland Industrial Finishes.

New Supplies and Equipment

G-10. Infinite control switch maintains wide range of heats

New Designed for infinite control throughout the entire range of heating element temperature, this new switch offers versatility and accuracy to electrically-heated appliances. The new switch is designed for use with electric cooking ranges, heaters, coffee ranges, commercial electric ovens, hot plates, griddles, and many other innovations.

The switch can be used with a single-coil element or by wiring dual-coil systems in parallel. On dual-coil systems a uniform heat can be developed simultaneously in both elements. The heater for the control bimetal has a low mass and a reasonable thermal coefficient of expansion, resulting in rapid expansion and contraction during each cycle of operation. Cycle lengths are engineered to produce good performance on the surface unit, yet are sufficiently long to contribute to extremely long life of the switch.

More Information

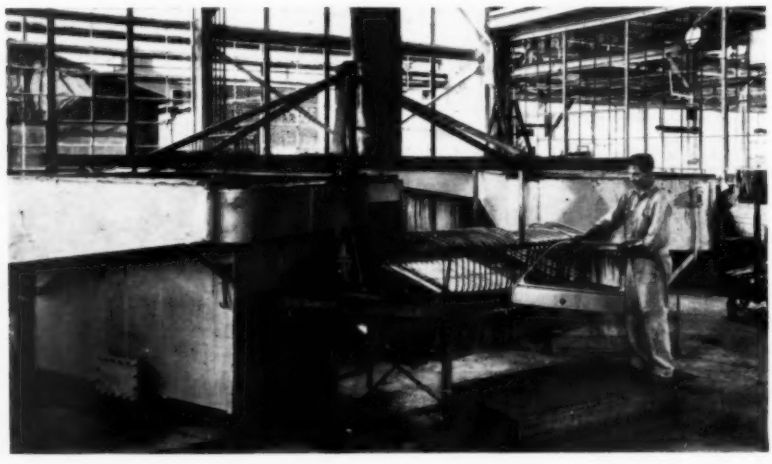
For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

G-11. Stripper for removal of coatings from ware and hangers

New A new, powerful paint stripper is now available for the rapid removal of paint and synthetic resin coatings from production parts and work hangers.

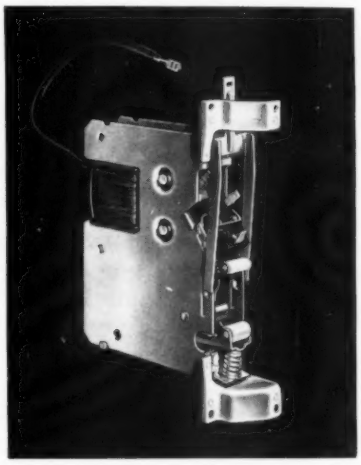
Used for quick removal of organic resin and pigmented coatings from steel, zinc, and magnesium alloys, it was especially developed for removing baked enamels, varnishes, and lacquers containing melamine, alkyd, methacrylate, polyamide, ureaformaldehyde, phenolformaldehyde, and Epon resins.

Applied in steel tank baths, a concentration of 25% to 100% may be used at temperatures from 100° to 225° F. Parts will rinse-clean by spraying. Non-inflammable and non-volatile, it is available in five grades for special use with various coatings and metals.



G-12. First solenoid latch for refrigerator doors

New The development of the first solenoid latch for refrigerator doors has just been announced. The latch is custom-designed for individual refrigerator manufacturers. Just a touch on a push-button or lever operates the mechanism. This closes the circuit energizing the solenoid which opens the latch. In the event of power failure, the latch can be manually operated by simply pushing harder on the opening device.



G-13. A 60-second metal cleaner

New A new metal cleaner now removes in as little as 60 seconds, at a concentration of ¼% to 2% by volume, all traces of oil, dirt, rust and tarnish. At the same time it deposits a light, uniform phosphate coating on the surface to assure better paint adhesion. The one-stage cleaner is especially designed for use in spray-type washers at temperatures of 160-180°F.

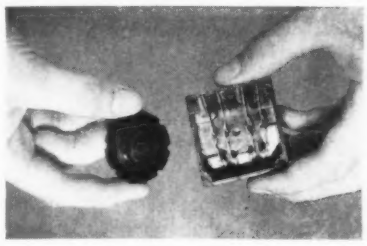
G-14. System for filtration of spray booth water

New A new filtration system for the removal of paint sludge and particles from paint spray booth

water has been announced. Through the use of this filter major problems formerly involved in the operation of paint spray booths are said to be eliminated. Of primary importance has been the necessity of removing as completely as possible the overspray from painting operations.

G-15. First single-knob infinite control for electric ranges

New This first single-knob infinite control for electric ranges is said to give anything from 3% to 100% of connected wattage.



It normal employs a 1 rpm synchronous motor, and can be provided with 2, 3, 4 or 5 rpm motor. It is primarily designed for control of surface units and deep-well cookers, and is adaptable for oven control.

G-16. Heavy-duty welding torch

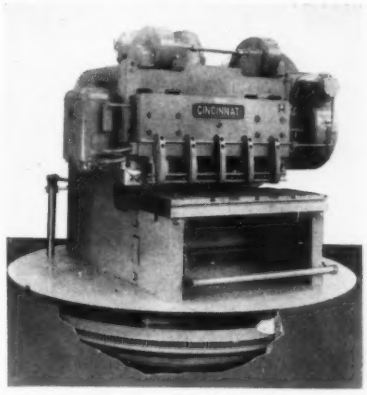
New Continuous heavy-duty inert gas arc welding at 500 amps is possible with the new water-cooled torch. Currents of all types

can be used to weld practically all commercial metals. It also can be used for hard-facing operations.

The torch is readily disassembled, and, because all internal water flow passages are straight, cleaning is an easy matter — even in "hard" water districts where lime deposits may be a problem. Only a quarter turn of the torch cap releases the electrode for replacement. No wrenches are needed. Electrode adjustments are made through the torch cap which prevents burned fingers from hot gas cups.

G-17. Shear for cutting mild steel up to 1" thick and 4' long

New The shear is mounted on a turntable that is rotated by means of a circular rack and pinion. The shear is set at different positions

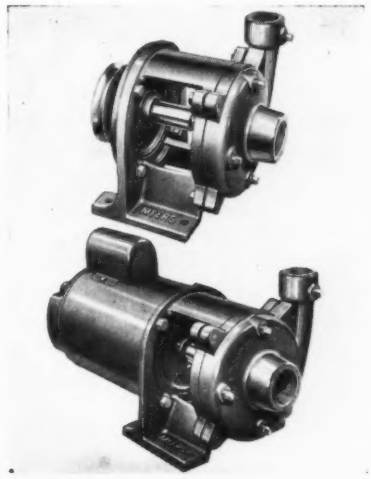


to eliminate as much handling of large plates and coiled stock as possible. The shear can be turned to 90 degrees either side of center.

The shear weighs 42,000 pounds, and operates at 30 strokes per minute. It is equipped with a hinged back gauge angle that permits the cutting of plates longer than the back gauge range.

G-19. Low-price centrifugal pump line introduced

New Available in 1/3, ½, ¾, and one horsepower sizes, the versatile line can be used with air-



conditioning and laundry equipment and for hot and cold water circulation, booster service, cooling systems, and other types of liquid transfer including use as a coolant pump by machine tool manufacturers. The new pump line will develop heads up to 92 feet with capacities up to 50 gallons per minute.

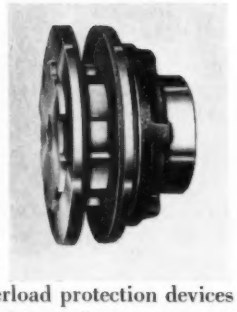
G-18. Low-cost dust control possible with new dust collector

New This simple and effective industrial dust control system can be installed in any shop at low cost, regardless of whether the machines generating the dust are operating at full production capacity.

As an example, a tool and die shop wanted to control the dust due to the operation of five surface grinders and a cutter grinder. Five of the machines are located in one row along a wall, as shown in the photo, while the sixth grinder is just across the aisle. The particular dust collector selected for this job was placed in the corner in line with the row of grinders. It has a rated volume of 2405 cfm, sufficient to collect the dust generated by all six machines operating full time.

G-20. New line of adjustable torque-limiting clutches

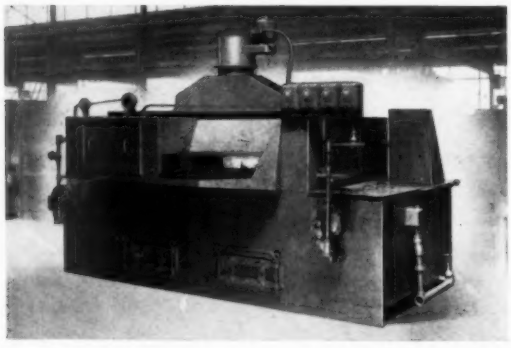
New The new line provides overload protection for machine drives in a wide variety of equipment. The slip-type friction clutches act as automatic shear pin mechanisms, and avoids the time and labor required to insert new shear pins. It is reported that they are ideally adapted as overload protection devices in the power drives of many types of industrial machinery, including conveyors, materials handling equipment and devices, packaging machinery and other related types of equipment where the torque capacity of the drive does not exceed 260 foot-pounds.



They are mounted on driveshafts with a standard keyway and set-screw arrangement.

G-21. Turntable washing machine takes minimum floor space

New A newly-designed washing machine has been introduced which incorporates several interesting features resulting in economy of space and economy of operation. Machine work either in baskets or in special fixtures rides on a turntable. That means great saving in space and operating personnel. The turntable brings clean parts back to the man who put the work in the machine.



High efficiency in operation is due to the turntable taking the work through a spray for washing and rinsing. It also takes the work through the air blow-off section, and then back to the loading-unloading station.

The unit is available in a wide variety of sizes, and the turntable is designed to accommodate all types of work in various stages of manufacture.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ **No.**_____ **No.**_____ **No.**_____

No._____ **No.**_____ **No.**_____ **No.**_____

Name _____ **Title** _____

Company _____

Company Address _____

City _____ **Zone**____ **State** _____

The equipment can be furnished for steam use of gas heat, and in special explosion-proof construction for use with petroleum solvents.

Industrial literature

701. Vitreous enamels for aluminum

New This new booklet, entitled "Colorful Vitreous Enamel for Aluminum", is available to fabricators interested in the use of enameled aluminum for appliance parts, furniture and cabinets, signs and labels, wall and ceiling panels, etc.

702. Metal mouldings for appliances

New A new book, entitled "Plan Book of Metal Mouldings", contains data on hundreds of standard and special mouldings which can be used by appliance manufacturers to enhance the beauty of their products.

703. Bulletin compares new and old NEMA motor standards

New The bulletin contains information on new NEMA motor standards. The standards, passed by NEMA on May 19, set up new frame dimensions for a-c motors from 1 to 30 horsepower.

The 8-page, two-color publication compares the old with the new frame assignments for open-type poly-phase, single-phase, and wound-rotor motors as well as totally-enclosed fan-cooled types. Also listed are suggested new frame assignments for foot-mounted and flange-mounted motors, and standards for minimum locked-rotor torque for general purpose single-phase motors.

704. Slide-chart calculator for selecting right fastener

New This handy slide-chart calculator enables manufacturers of assemblies to select the right fastener for each job quickly and easily. It is 8½" wide x 5½" high, lithographed in red and blue on white smooth finished heavy cardboard.

ADS OUT

Steel kitchen cabinet men map sales plans

death of executive secretary-treasurer follows first official annual meeting of Steel Kitchen Cabinet Manufacturers Association.

"CABINETS of Steel for Lasting Appeal" was the unanimous choice for a slogan to be used by the Steel Kitchen Cabinet Manufacturers Association when stressing the advantages of their product to the public.

The Association just completed its first annual meeting, which was held at The Greenbrier, White Sulphur Springs, W. Va., June 4—6. The meeting was attended by 45 representatives of organizations manufacturing steel kitchen cabinets. A Sales Promotion & Advertising Committee, under the chairmanship of Chas. E. Howes (Republic Kitchens) prepared the new slogan, and it was immediately accepted by the group. At the same time, this committee announced the ground work for a brochure describing the industry, its product, and its trade association. The brochure will be prepared shortly and distributed to home owners, builders, architects, contractors, and other interested parties.

Arthur J. Tuscany, Sr., executive secretary-treasurer of SKCMA, died the week-end following the meeting. He was long active in laying the groundwork for a permanent industry association.

The Association was organized in December, 1951, with 19 companies, and now has 21 companies representing well over 90 per cent of the companies in industry. A change in the fiscal year of the organization delayed the official annual meeting until the organization had operated a year and a half.

Election of officers

Officers for the coming year are president, M. M. Miller, Miller Metal Products, Inc., and vice president, F. E. O'Connor, Geneva Modern Kitchens, Inc. Directors of the or-

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Left to right: Kneeling — A. C. Deimel, Youngstown Kitchens; W. F. Marks, Universal-Rundle; J. Lewis Palley, Palley Mfg.; J. T. Schneider, Harrison Steel Cabinets; J. A. Schilpp, Tracy Mfg.; Arthur J. Tuscany, Jr., SKCMA; R. W. Sponholtz, Geneva Modern Kitchens; R. A. Coffin, Tracy. Standing — R. J. O'Connor, Miller Metal Products; W. F. Riesmeyer, Palley; H. J. Benzie, General Electric; J. E. Guertin, Crosley; C. F. Hastings, American Kitchens; C. A. Reinbolt, Jr., American-Standard; W. L. Klinkenstein, Palley; H. A. Moulton, American-Standard; C. A. Morrow, Youngstown; C. S. Motter, Morton; M. M. Miller, Metal Products; M. J. Berz, Marvel Metal Products; R. A. MacNeille, St. Charles Mfg.; L. L. Leape, Tracy; F. W. Fennell, Universal-Rundle; F. T. Grothouse, General Electric; E. J. Catlin, Morton; H. S. Lawrence, Capitol Kitchens; D. R. Barber, Elgin Kitchens, A. Hubeny, Hubeny Bros.; F. E. O'Connor, Geneva; C. W. Howes, Republic Kitchens.

Simplified assembly . . .

→ *from Page 25*

clips snapping firmly into openings in the tub ring.

Of particular interest is the fact that the fastener used in this assembly operation was designed to make unnecessary any tub or tub ring die alterations. Dimples at either end of the clip fit tightly into mounting holes previously required in the screw assembly method. The mounting holes, essential to previous screw assembly, are thus made an advantageous addition to the new fastening.

The S-type clip for this particular Whirlpool assembly constitutes a successful effort to devise a tailor-made fastener to meet a special manufacturing problem.

Look-ahead manufacturing at Odin Stove

(Continued from Page 27)

punches along the front and back edges, in one operation.

In a special, plant-engineered die used in a wide-bed 300-ton press, some 70 holes, running from 0.125 inches to about two inches in diameter, are simultaneously pierced in a range back. These openings in a 20 gauge, 32″ x 38″ panel are used in assembly of various range components such as rails, and in overall assembly work. But a few feet to one side, another large press forms up the back edges in a follow-up operation. One-hundred-ton presses are used in blanking and piercing oven bottom baffles, in one strike, and in double-die rough and finish forming of drawer rails, for instance.

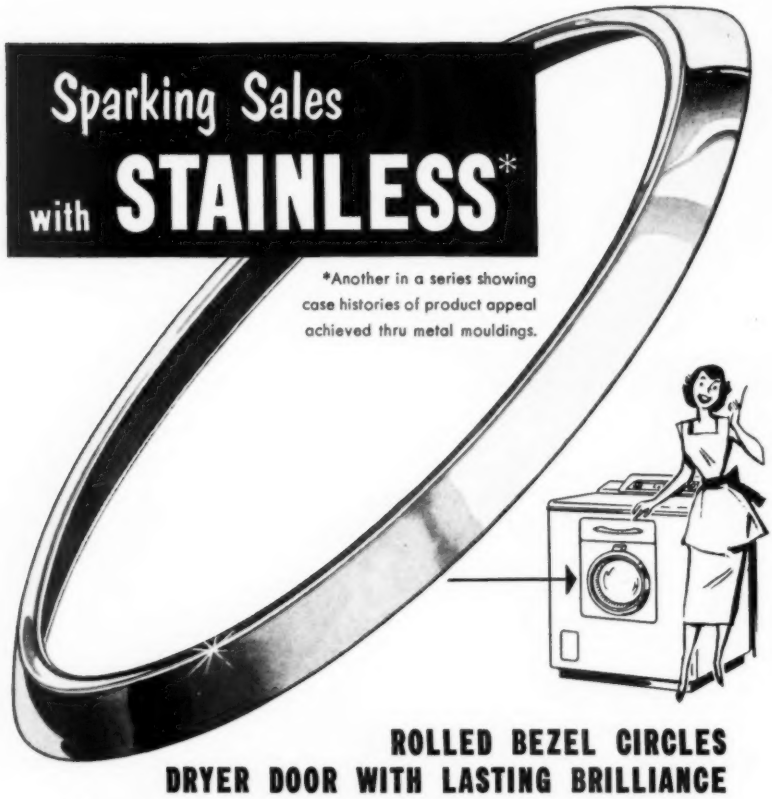
In a room about 100 feet square, and lying between metalworking and final assembly operations, is the cleaning-painting-drying department. Its overhead conveyor feeds the japanned and aluminized range components directly to banks or stock piling just outside one end of the room. Materials handling is thus reduced to a bare minimum.

In the second-floor machine shop, a fine example of fixturizing includes a battery of table-mounted drills that put from 10 to 58 holes in a range oven and top burners. Pneumatic synchronizers serve to control indexing of the burners, and in-and-out-movement of the drills. Air power also figures importantly along the assembly line, running suspended air screw drivers and the like.

Rotiss-A-Range has interesting design features

The Rotiss-A-Range is one of the company's latest models. Behind the conception, design and building of this unique range are top management personnel such as E. C. Fisher, president and administrative head of engineering; K. C. Hampel, general manager, and S. V. Beasley, chief engineer of product and research.

Features of this product include design unity accomplished with a repeated pattern of curved openings and edges, and balancing through


Sparking Sales
with STAINLESS*
*Another in a series showing case histories of product appeal achieved thru metal mouldings.

ROLLED BEZEL CIRCLES
DRYER DOOR WITH LASTING BRILLIANCE

Here stainless steel has been rolled into an attractive bezel for a modern automatic gas dryer.† Equally attractive is the fact it was done at less cost than an expensive stamping or casting.

For circles, particularly, lend themselves to roll forming. High tool costs are eliminated because rolling machines are simply set to roll mouldings out in spirals. And production costs are held to a minimum because there are no wasteful drop-offs. This process is versatile, too…can handle circles as little as four inches in diameter to huge rings many feet in diameter.

Whether your requirements are for circles—or for straight mouldings, standard or special—Pyramid is equipped to serve you.

†Name on request.

Pyramid Mouldings Inc.

5365 West Armstrong Ave., Chicago 30, Ill. • New York • California

left-right, straight vision lines that run from the plain top band of the escutcheon down through the exterior. Door handles and manifold trim strip help the design theme. Chrome plating, used extensively in the oven and rotisserie sections, also recurs throughout the range.

Odin's "snap-on" backrail completes all electrical contacts through special plugs, and makes domestic installation extremely simple. Many "extras," such as "Swift'N'Simmer" burner units, are optional equipment. The rotisserie itself has an easily removed spit, converting the barbecue unit into a broiler, or an open pan roaster. The rotisserie is electric, in a gas range, but no special wiring is required.

Steel kitchen cabinet manufacturers meet

→ *from Page 59*

ganization are C. D. Alderman, Youngstown Kitchens; Davitt S. Bell, Tracy Manufacturing Co.; T. W. Hardy, Murray Corporation; C. Fred Hastings, American Kitchens; R. A. MacNeille, St. Charles Mfg. Co.; C. S. Motter, Morton Manufacturing Co. Arthur J. Tuscany, Jr., was re-elected assistant executive secretary-treasurer.

The Trade Statistics Committee, under the chairmanship of Chas. Morrow, reported that the quarterly group statistics available to members concerning production and distribution of kitchen cabinets as a total for the industry will be continued through the use of an outside statistical agency. Plans were approved for providing a portion of this report on a monthly basis.

A. C. Deimel (Youngstown Kitchens), chairman of the Packaging, Transportation & Traffic Committee, reported that his group was keeping in constant touch with shipping problems to minimize transit damage and to keep shipment charges at the lowest possible cost consistent with careful handling.

A Technical Committee under the chairmanship of R. W. Sponholtz (Geneva Modern Kitchens), reported on ways and means by which this organization could work with the Federal Housing Administration in connection with their proposed standards for kitchen cabinets.

F. E. O'Connor (Geneva Modern Kitchens), membership chairman, reported that progress has been made concerning new companies who desire to affiliate with SKCMA.

The meeting concluded with a farewell testimonial dinner in honor of Chas. A. Morrow, who is retiring from the industry after thirty-three years of service with Youngstown Kitchens.

Paint adherence

→ *from Page 40*

such expedients are tried, the results should be examined carefully to determine whether the gains obtained in production time, or in increased chemical resistance of the films, may not be outweighed by the disadvantages of loss of adherence. No matter

Robertshaw® MODEL F-1
Single Pole, Double Throw

Used to control two heating circuits, or to operate a motor when such operation is required in combination with a heater or commercial laundry dryer, etc. where it shuts off current to heating element and turns on signal light.

When thermostat calls for heat, high heat element automatically cuts in and holds until set temperature is reached. Main contacts are then broken automatically and low, or holding, element is cut in to function until drop in temperature again calls for heat. Maximum temperature range 550°F. Write for full information.

Robertshaw
THERMOSTAT DIVISION
ROBERTSHAW-FULTON CONTROLS COMPANY, YOUNGWOOD, PENNSYLVANIA

how good the film may be otherwise, if it isn't well anchored to the metal, then the metal will not be protected. Increased blistering tendencies and increased rates of underfilm corrosion may be the result of even small failures in adhesion. Where the failure is greater, the film will be more easily dislodged by impact, or by abrasion, or by exposure to low temperatures.

Stopping the cure of the resin, when the balance between cross-linked resin and thermoplastic residue are at a optimum, is sometimes subject to pitfalls. Some under-cured resins, particularly such as are catalyzed to cure at low-baking temperatures, will continue to cure at a much lower rate when the coating is in service even at room temperature. Shinkage will continue as the resin cures, and in time the film will pull out of its anchoring surface. This is particularly a fault of some curing types of wood finishes, although it is known to happen also for some types of protective coatings on metals. In any instance, any time-tested formula that relies on curing catalysts should not be tampered with in order to speed or retard the cure by any such changes as altering proportions of catalysts or varying the baking conditions. Apparently good results that show immediately may not be improvements at all when viewed over the whole lifetime expectancy of the film.

Effect of pigmentation

Some pigments have a beneficial effect in promoting long-term adherence of paint films or in maintaining proper physical properties of the film. Such, for example, are certain anti-corrosive pigments such as red lead, white lead and some zinc chromates. Other pigments are neutral in this respect, as are the titanium pigments, while some others are definitely harmful, as are some iron blues, clays, and some organic red and yellow pigments. If a paint is tested in a particular pigmentation (or color), its adherence and durability may be outstanding as compared to what is obtained in other colors.

There isn't much the paint user can do about this except to realize that if he wants to place emphasis on protective properties, particularly such as are influenced by long-term adherence, then he must limit himself in choice of colors. Where several colors are equally acceptable, it is prudent to include in the test program a search for the most durable. Too frequently there is a tendency to test extensively some one convenient color, and then use another. Because the resinous binder may be the same in the two instances is no guarantee that the two paints will otherwise have the same properties as were established in the testing program.

Effect of method of paint application

Some paint application methods—such as roller coating, brushing or spraying—apply a greater shearing stress to the film which helps penetration into the surface, or which facilitates the wetting of the oxide

Material: Clay Slip.
Problem: Short pump life caused by abrasion.
Solution: Moyno handles slip of 1.8 specific gravity—and gets about 1 year service on rotor and stator. Customers well pleased.

Material: Paint Primer and Surfacer.
Problem: Finding pump that would offer reasonable service life.
Solution: For past 2 years, Moynos have been pumping these abrasive materials at 40 p.s.i.—and maintenance costs are minimum.

Material: Special Navy Paint.
Problem: Low volume of gear-type pump; necessity for pre-heating paint before pumping.
Solution: Moyno cuts tank-car filling time from 10 hours to 2⅓ hours. No maintenance costs for past two years!

Material: Baking Enamel and Primer.
Problem: Recirculating abrasive material in closed system at 90 p.s.i.
Solution: Moyno pumps used successfully, with minimum repairs, for the past 4 years and are kept in operation 24 hours per day.

Four Industrial Finishing Problems Solved With The MOYNO PUMP!

Features of the MOYNO that may solve YOUR pumping problem

Positive Displacement — Moynos pull up to 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Gentle — no churning; won't break up semi-solids; won't aerate liquids.

Reversible — pumps with equal efficiency in either direction.

Versatile — handles liquids, slurries, pastes—even potato salad! Rotor and stator available in stainless steel, other alloys, or plastics to meet wide variety of applications.

Trouble-Free — self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

Looking for a pump with a fast-growing reputation for solving tough problems? Take a look at the simple, versatile Moyno!

Briefly described above are a few of the many successful case histories proving how Moynos handle jobs where other pumps failed. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps—rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

If *you* have a pumping problem caused by abrasive or corrosive materials—watery, viscous or even semi-solid—find out if the Moyno can help you! Mail the coupon.

ROBBINS & MYERS • Inc.
SPRINGFIELD 99, OHIO • BRANTFORD, ONT.

Robbins & Myers, Inc. F-73
Pump Division, Springfield 99, Ohio
Gentlemen: Please mail free copy of Bulletin 30-B containing details on construction and operation of Moyno Pumps:
*Name*_____ *Title*_____
*Company*_____
*Address*_____
*City*_____ *State*_____

film on the metal. Other methods—such as dipping—provide very little assistance in this respect. The difference in application methods sometimes produces different results with respect to the adherence of the same type of paint on the same type of surface. Particularly is this true for those paints that are designed to air-dry or to bake very quickly.

Similarly, differences can be caused by the adjustment of the spraying operation in those factors that determine the solvent content of the paint when it strikes the work. Spraying as dry as possible is sometimes helpful in building heavy films without sagging—but the gains may be offset by loss of adherence of the finished film. In this respect, the temperature of the paint and temperature of the surfaces may influence the development of proper adherence.

Some paint formulations, usually the types having mediocre film properties, are relatively insensitive to the manner of paint application. However, for most paints this feature is so important that test data on paints are of doubtful validity unless the test panels are prepared in a manner that coincides with what will be the intended commercial practice.

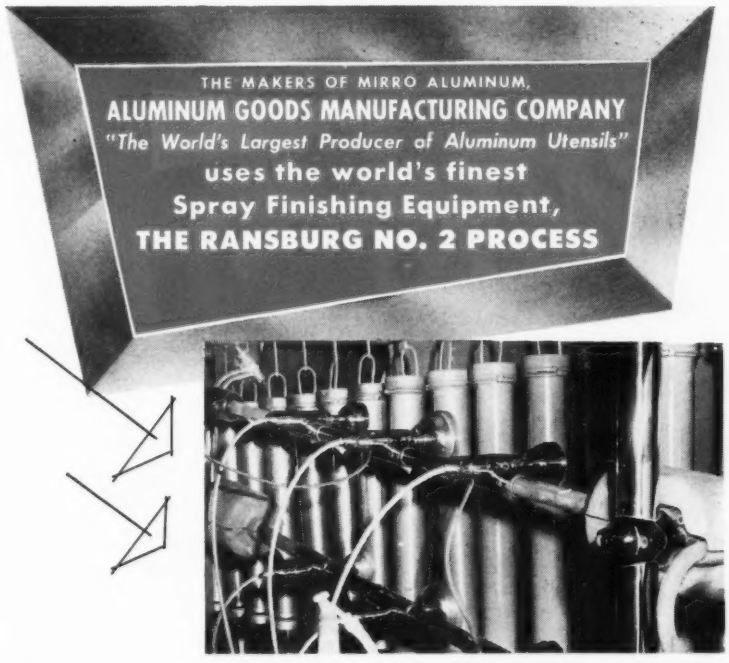
Effect of film thickness

The thickness of the film determines in an important way the mechanism of film formation; for example, rate of solvent evaporation, extent of solvent retention, and the conditions of curing (e.g., is the top of the film harder than the bottom?). Also, the less thick the film, the greater is the interfacial area per unit volume of the film.

All of these factors cause wide variations in adherence that depend on film thickness. Some films, when applied to tin plate for example, can stand forming operations as severe as is experienced in the drawing of crimped bottle caps. By contrast, the same paints when applied at 1 mil thickness instead of 0.2 mil or less, might crack and peel when the panel is bent over an one-eighth inch mandrel.

Nearly all the instrumental methods for measuring adherence give successful comparisons for different materials only if the film thickness of all is nearly the same. In general, thin films of nearly all paints seem to be more adherent than thick films, and no scientific explanation of this phenomenon has yet been presented which explains all of the facts. In practical paint application, the existence of the general fact is too little known and less appreciated.

Without a doubt, precise control of the film thickness should be one of the more important functions of paint inspection in any extensive production finishing operation. Many realize that a paint film can be too thin. It is less common knowledge that adherence troubles can develop sometimes if it is too thick. Film thicknesses should be controlled within the narrow range of specifications that were established as correct in the laboratory tests which motivated the choice of that particular paint.


THE MAKERS OF MIRRO ALUMINUM,
ALUMINUM GOODS MANUFACTURING COMPANY
"The World's Largest Producer of Aluminum Utensils"
uses the world's finest
Spray Finishing Equipment,
THE RANSBURG NO. 2 PROCESS

Automatic, electrostatic spray painting is helping speed up Defense production in the Aluminum Goods Manufacturing Company plant. Here, they use the Ransburg No. 2 Process to paint 3"/50 caliber cartridge tanks in their Navy Rocket Container department in the Manitowoc, Wisc. plant. The Ransburg unit was selected for this job for its greater efficiency . . . consistent high quality in production . . . and economical operation.

Write for our brochure which contains detailed information on the Ransburg No. 2 Process, as well as production performance on numerous other installations.

Electrostatic Painting Processes

RANSBURG ELECTRO-COATING CORP.

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Danielson

your stamping headquarters

for ***PRECISION WASH MACHINE PARTS.....***

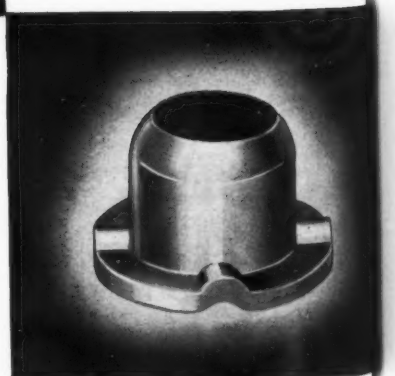
Two of the various types and styles of pulleys produced by Danielson. For production economies, Danielson stamped, spot welded pulleys can't be beat.

CASTER SOCKETS AND BRACKETS ...OUR SPECIALTY...

Here are a few of the types of caster sockets and brackets manufactured by Danielson. All are produced with extreme economy to exact specifications. Let us figure on your needs.

Our plant is specially geared for this type of work where high production and low cost are a prime factor . . . . . and yet quality and precision workmanship are always our goal.

Our Press Department is equipped with presses ranging from 5 ton to 300 ton capacity, and specializing in deep draw work for Appliance and other Metal Products Manufacturers. Other services include: Shearing — Circle Shear — Spot Welding — Arc Welding — Silver Soldering — Hydrogen Brazing — Polishing — Degreasing — Painting — Assembly — and our complete Tool and Die Department will furnish precision tooling for your own fabricating department.



Danielson stamped **WELD NUTS** for use on automatic washing machines, dryers, refrigerators and other similar products requiring leveling at point of installation.
Danielson **WELD NUTS** made in a multi-sequence stamping process are equal in durability and strength to any machined weld nut but cost less.

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MANUFACTURING COMPANY

3360 W. HOPKINS ST. • MILWAUKEE 16, WISCONSIN • Phone CUSTER 3-3800

We welcome the opportunity to quote — Write, phone, or wire, today!

VAUGHN NEW REMINGTON P. A.

Announcement has been made of the appointment of William L. Vaughn as purchasing agent for Air Conditioning Division of Remington Corporation, Auburn, N. Y.

BORG-WARNER UPS RICKARD

Announcement has been made by R. C. Ingersoll, president of Borg-Warner, naming Frank W. Rickard to the newly-created post of director of manufacturing services. Rickard was formerly general superintendent in charge of production at the Chrysler Corp. tank engine plant, New Orleans.

MAYTAG PROMOTIONS IN MARKETING DIVISION

Murray C. Lawson was named product manager, home freezer division, product and market planning department, and Einar A. Larsen named manager of the retail sales training department, it was announced by the Maytag Marketing Division, Newton, Iowa.

CLEGHON NAMED SUPT. OF A-B STOVES DIVISION

O. R. Candler, vice president in charge of manufacturing at Detroit-Michigan Stove and the A-B Stoves Division, Battle Creek, Michigan, has announced the appointment of T. G. Cleghon as general superintendent of the A-B Stoves Division. Cleghon started in his career at Samuel Stamping and Enameling Co., Chattanooga, Tenn., in 1931. He went to Clyde Porcelain in 1936, and was there until he joined the Army in 1943. After three years in the Army, he joined Baltimore Porcelain Steel Corp., where he has been until recently becoming identified with A-B Stoves.

FOOD WASTE DISPOSER SALES HIT QUARTER MILLION MARK

Information released by the Plumbing and Heating Industries Bureau points up increasing sales of the under-the-sink automatic electric food waste disposal units. Sales of the units are reported to be currently running a close race with mechanical dishwasher sales at a quarter of a million units a year.

GAS WATER HEATER SHIPMENT HIGHEST IN LAST 25 MONTHS

Shipments of automatic gas water heaters climbed to a 25-month high during April, according to the Gas Appliance Manufacturers Association.

Edward R. Martin, GAMA director of marketing and statistics, reported that April shipments totalled 218,600 units, highest since March, 1951, and a 42.6 per cent increase over the same month of 1952.

Gas water heater shipments for the first four months totalled 797,500 units, a 32.7 per cent gain over the first four months of 1952.

ENAMEL PLUMBING FIXTURES SHOW PRODUCTION GAIN

According to figures released by the U. S. Department of Commerce, Bureau of Census, the production of formed steel porcelain enameled plumbing fixtures showed more than 12% increase in shipments for the first quarter of 1953 over the first quarter of 1952.

CREAN TO INGERSOLL PRODUCTS

Appointment of R. B. Crean as administrative assistant to the president of Ingersoll Products Division, Borg-Warner Corp., Chicago, was announced by Robert S. Ingersoll, president. Crean resigned as vice president, Eddystone Division, Baldwin Lima-Hamilton Corp., to accept the new position.

MULLINS PROMOTES THREE

Promotion of three Youngstown Kitchen sales executives was announced by C. D. Alderman, vice president in charge of merchandising. Those promoted are: D. F. Rucks, Jr., to general manager of merchandising; M. L. Ondo, to sales manager; and William H. Powell, to assistant sales manager and manager builder sales.

SMITH ELECTED PRESIDENT OF INDIANA STEEL PRODUCTS

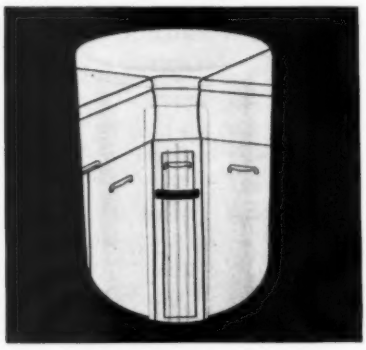
The Indiana Steel Products Company, Valparaiso, Ind., has announced the election of Robert F. Smith, former vice president and general manager, as president and a member of its board of directors.

REPUBLIC STEEL MAN TO NPA DIVISION POST

Appointment of Samuel A. Crabtree, Chicago district sales manager of Republic Steel Co., as deputy director of the Iron and Steel Division, National Production Authority, was announced recently. He succeeds. William J. Stephens, who was appointed director of the division.

CROSLEY MAKING WATER HEATER FOR CORNER INSTALLATION

A new 50-gallon Crosley electric water heater is designed for under-



counter installation in the corners of kitchens where space often goes to waste, according to F. F. Duggan, general sales manager of appliances, Crosley Division of Avco Mfg. Corp.

JET AIR CONDITIONING UNIT HAS NO MOVING PARTS

At a meeting of investment bankers in Chicago recently, Harold W. Danser, Jr., president of Ultrasonic Corp., Cambridge, Mass., displayed a model of his company's new jet-type room air conditioner.

In Ultrasonic's jet refrigeration system, heat is applied to a small boiler which provides a vapor to drive a jet pump consisting primarily of a nozzle and tubing. The combination boiler and jet pump produce a system with no moving parts. Heat may be applied to the boiler by an electric heating coil or oil or gas flame, it was stated.

FERRO EXECUTIVE RESIGNS

George W. Wallace has announced his resignation as vice president of operations, Ferro Corporation. Effective September 1, Wallace will move to Ft. Lauderdale, Fla., where he will engage in personal business activities. He will continue as a director of Ferro.

GRAND SHEET METAL PURCHASES VIDRIO PRODUCTS

Grand Sheet Metal Products Co., Melrose Park, Ill., has announced the purchase of Vidrio Products Co., Chicago, manufacturers of small appliances, including portable clothes washers, electric mixers, and food blenders. Vidrio will be operated as a wholly-owned subsidiary.

GENERAL WATER HEATER ACQUIRES PALM MFG.

A recent report states that General Water Heater Corp., Burbank, Calif., maker of gas water heaters, has acquired Palm Mfg. Co., San Mateo, Calif., manufacturers of Sierra circulating air wall heaters. It was indicated that Palm Mfg. will be operated as a division of General Water Heater.

HOOVER CLOTHES WASHER FOR SMALL HOMES, APARTMENTS

A new washing machine, designed primarily for small homes and apart-

ments has been developed by The Hoover Co., a pioneer maker of electric cleaners and other electric appliances.

The washer is slightly over 30 inches high, and the top dimensions are 16½ x 17½. It will wash six pounds of clothers in four minutes. The wringer folds inside the washer when not in use.

***General enameling division**—of Porcelain Enamel Institute—at May 8 meeting at Edgewater Beach Hotel, Chicago. Left to right: Seated: Don Malcom, Armco Steel; C. P. Lohman, Pemco; H. A. Ringelberg, Challenge Stamping; Edw. Mackasek, PEI managing director; and John Oliver, PEI secretary. Standing—T. H. Wiebell, Barrows Porcelain; Roger Fellows, Century Vitreous; J. V. Long, Solar Aircraft; J. W. Vicary, Ervite; Hollis Saunders, Hommel; W. A. Barrows (PEI president), Barrows Porcelain; J. E. Bourland, Texlite; W. H. Lowry, Vitreous Steel; J. H. E. McMillan, Ingram-Richardson; D. M. Meeker, Toledo Porcelain; J. J. Svec, Ceramic Industry; J. F. Janecke, Ferro; J. A. Holcomb, Wolverine Porcelain; J. R. Sweeny, Porcelain Metal; F. E. Allen, Architectural Porcelain Constructors; John McCord, Ferro, and Wayne Deringer, A. O. Smith Corp.*

finishfoto

THOR BUYS CENTURY VITREOUS

Thor Corporation, Chicago, has purchased Century Vitreous Enamel Co., Chicago, it was announced by John R. Hurley, Thor president. It was stated that Century Vitreous, a Thor supplier previous to the acquisition, will continue operation as a wholly-owned subsidiary.

George Sirovy, Sr., formerly vice president of Century Vitreous, has been named president and a member of the board of the new Thor subsidiary. Other members of the board include John R. Hurley, and Henry Buckingham, Thor vice president, who will be vice president of the subsidiary.

Other officers include Victor F. Melin, secretary-treasurer, and A. M. Krause, asst. secretary-treasurer. Melin and Krause hold the same positions with Thor.

NATL. STEEL CONSTRUCTION TO PRODUCE ROOM COOLERS

National Steel Construction Co., Inc., Logansport, Ind., has announced plans for producing a new room air conditioning unit. It will be fabricated in the Logansport plant, said J. P. Hutchinson, sales manager.

AMERICAN NICKELOID NAMES CANADIAN SALES REP.

Howard S. Griffin has been appointed Canadian sales representative for American Nickeloid Co., of Peru, Ill., it was announced by Carl C. Struever, general manager.

Operating out of the company's Canadian offices, in Toronto, Griffin will be in charge of pre-plated metal sales for the provinces of Ontario and Quebec.

SORENG ANNOUNCES LARGEST APPLIANCE COMPONENT SOURCE

Soreng Products Corporation, resulting from the merger of Soreng Manufacturing Corporation and Sampsel Time Control, Inc., has announced the complete integration of facilities and personnel into one organizational unit. The present Soreng organization is described by its management as the largest single source of appliance components in the country. Plants are located at Schiller Park, Illinois; Spring Valley, Illinois, and Fremont, Ohio.

Soreng now manufactures solenoids, switches, timers, terminals, shaded pole motions, heat controls, solenoid operated valves, and other custom-designed electrical and electronic components.

EASY TO PRODUCE AUTOMATIC WASHER BY MID-SUMMER

Easy Washing Machine Corp., Syracuse, N.Y., will produce an automatic washer by mid-summer it was announced by W. Homer Reeve, president. The automatic washer will be a cabinet-type top loading machine. The company will continue the manufacture of its Spindrier and wringer model washing machines.

GAS RANGE SHIPMENTS IN FOUR MONTH RISE

Shipments of domestic gas ranges continued to increase during April over 1952. The April shipment of 232,400 units (up 27.5 per cent over April 1952) raised the total for the first four months of 1953 to 817,100 units, 16.8 per cent higher than the 699,800 figure reported for the comparable period of 1952, according to the Gas Appliance Manufacturers Association.

LEWYT TO MANUFACTURE AIR CONDITIONERS ON CONTRACT

Lewyt Corporation, Brooklyn, N. Y., manufacturers of vacuum cleaners, is planning to produce room air conditioners of various sizes on a contract basis for the 1954 selling season, it was revealed by Alex M. Lewyt, president. The company has been doing contract manufacturing work of various products since 1888.

MCKESSON NAMED PRESIDENT OF NEWLY-FORMED ARI

At the first meeting of the board of directors of the newly-formed Air-Conditioning and Refrigeration Institute, held May 18-19, L. C. McKesson, vice president in charge of sales, Ansul Chemical Co., was elected president. He is currently president of the Refrigeration Equipment Manufacturers Association.

***50,000th rotary power mower**—was produced recently by Newark Stove Co. It seems only a few months ago that a top executive of Newark Stove, while in the finish offices, displayed a component for a new rotary power mower which was planned for production. Shown with their 50,000th Craftsman mower are F. H. Guthrie (left), president, and L. S. Richardson, merchandise manager.*

LAUNDRY EQUIPMENT SALES RISE OVER 30% FOR FIRST QUARTER

Factory sales of standard-size household washers in the first quarter of 1953 were 32.2 per cent greater than in the same quarter of 1952, totalling 949,902 units, compared to 718,283 units, according to figures for the membership of the American Home Laundry Manufacturers Association.

Automatic tumbler dryers aggregated 168,989 units, an increase of 29.3 per cent over 130,822 last year: ironers were up 33.7 per cent, 63,049 compared to 47,179.

finishfoto

***Tuttle & Kift sales staff** — presented H. F. Bond, who recently retired as vice president in charge of sales, with a beautiful wrist watch at a "time out" session during recent stove industry meeting in Cincinnati. Shown in photo, l. to r.: Front row—Maynard Ford, Florence Evert, T&K director of home economics, Harold Burke, H. F. Bond, vice president, and H. K. Dewees. Back row—John Kauffman, sales manager; Willard Crandall, William Robinson, and Harry Bell. Men listed without titles are T&K sales representatives.*

TUTTLE & KIFT RE-ASSIGNS TOP SALES POSITIONS

Reassignment of top sales responsibility at Tuttle & Kift, Inc., manufacturer of electrical heating elements and controls, were announced recently by H. F. Bond, vice president in charge of sales.

John Kauffman, sales manager, has taken over direction of all sales for the company. D. W. Walling will continue to handle the range and water heater unit replacement business through sales representatives and distributors.

Bond, under whom T&K sales rose to record highs in the past year or

NAGEL-CHASE V-BELT PULLEYS

for AUTOMATIC WASHERS and DRYERS

For a better pulley that offers production economy as well, specify Nagel-Chase V Belt Pulleys for your automatic washers and dryers.

Made by specialists in pulley and caster manufacture, they are precision-built from welded pressed steel for long trouble free service with minimum belt wear. The solid steel hub is designed so that the pulley cannot come loose.

Nagel-Chase V-Belt Pulleys are made in several styles, with or without bushings and as stepdown pulleys with the smaller pulley turned into the hub or integral with the larger. They may be supplied unfinished or with a long lasting aluminum lacquer finish.

Whatever your pulley requirements — consult Nagel-Chase first — it will pay you!

THE NAGEL-CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

ALSO MANUFACTURERS OF NAGEL-CHASE WASHING MACHINE CASTERS

so, is retiring from active management, but will remain on the board of directors.

It was indicated that an announcement will soon be made regarding setting up of a new Ferro Corporation subsidiary of which Bond will assume active direction.

FRIGIDAIRE MAN JOINS PORCELAIN ENAMEL INSTITUTE

William N. Brinker, formerly of Pittsburgh, Pa., has joined the staff

of the Porcelain Enamel Institute, Washington, D. C., as administrative assistant, succeeding Homer Humbert. He will be engaged in the market development phase of PEI activities, concentrating particularly on publicity work.

Brinker started his career with Batten, Barton, Durstine & Osborn, advertising agency, then spent six years in the advertising and sales promotion department of Aluminum Cooking Utensil Co. He was most recently a member of the sales planning department of the Frigidaire Division of General Motors Corp., Dayton, Ohio.

JONTZ TO HANDLE VITRA-PUMP SALES IN WEST

Charles J. Rogers, Jr., president of Quinn-Rogers Mfg. Co., Forest Park, Ill., have announced the appointment of Melvin L. Jontz Co., Los Angeles, as sales representative for company's Vitra-Pump on the West Coast.

HOTPOINT BUSINESS RUNNING 90% AHEAD OF A YEAR AGO

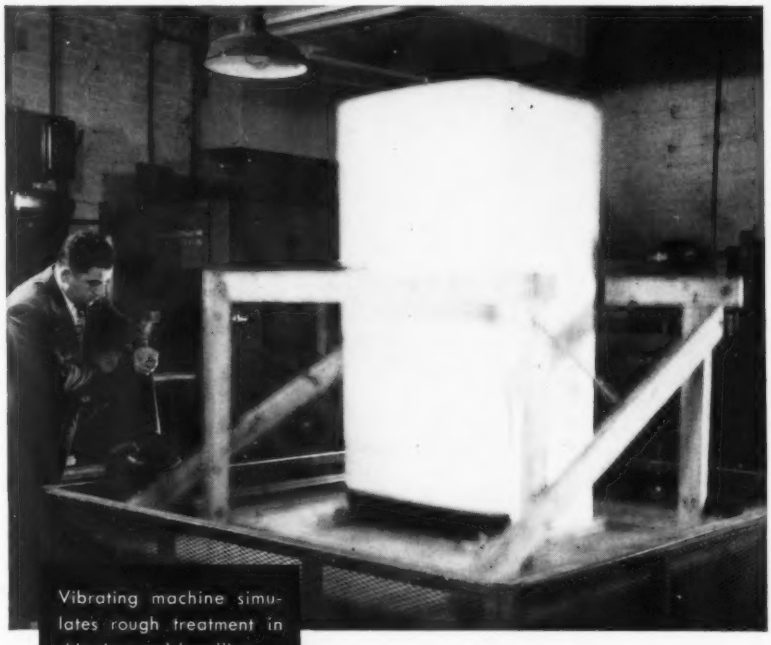
Hotpoint Company business is running approximately 90 per cent ahead of operations a year ago, John C. Sharp, president, said in a progress review of his first 12 months as president. He was named president in May, 1952.

At the current rate of sales, Hotpoint is also ahead of the early months of 1951, which was one of the top years in the post-war appliance business.

FRESH'ND-AIRE PORTABLE ELECTRIC DEHUMIDIFIER

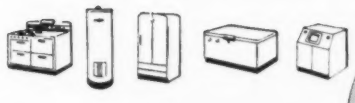
J. W. Alsdorf, president of Cory Corporation, Chicago, has announced the introduction of a new Fresh'nd-Aire portable electric room dehumidifier. This 1953 model is in volume production at their new Grayslake, Ill., plant, and is a part of the Fresh'nd-Aire line of appliances.

OUR PLANTS are part of your production line...



Vibrating machine simulates rough treatment in shipping and handling... demonstrates non-settling properties of Fiberglas Insulations.

FIBERGLAS* TESTS like this can help you double-check how insulation performs in your appliances.



..and this quality feature is part of your selling line!

FIBERGLAS INSULATION MADE BY OWENS-CORNING FIBERGLAS insulated OWENS-CORNING FIBERGLAS CORPORATION - TOLEDO 1, OHIO

TUNE IN "ARTHUR GODFREY TIME", sponsored by Owens-Corning Fiberglas Corporation, broadcast over a nationwide CBS television and radio network.

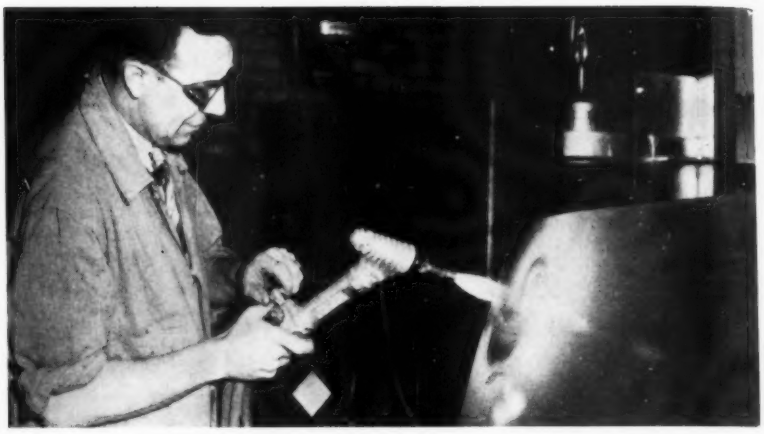
*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

DETREX ENGINEER DIES

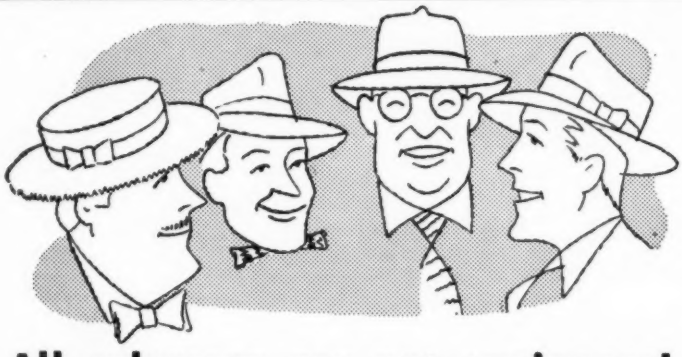
Stewart A. Millar, 27, new products development engineer for Detrex Corp., Detroit, died recently. Millar had joined Detrex as a full-time employee in January, 1950 and was reported to have been a key man in the development of ultrasonic metal cleaning equipment.

DETROIT REGULATOR CHANGES NAME AND LOCATION

Detroit Regulator Company, formerly at Rivard & Sherman, Detroit, has announced that they have changed their name to "Maxitrol Company", and are now located at 12200 Beech Road, Detroit 28, Michigan.



***Portable flame-spray gun**—for applying porcelain to steel plate—is demonstrated by Paul Cecil, chief of research for Seaporcel Metals, Inc., Long Island City, N.Y. The gun shoots porcelain material through a high temperature acetylene flame and fuses it to steel. Technique is said to open way for coating steel structures too large for factory treatment.*



All salesmen are not engineers!

Unlike salesmen with the single ambition to sell more goods, Sales Engineers analyze customers' problems, make expert recommendations, see the job through.

Klem has no salesmen—just Sales Engineers supported by lab facilities that duplicate any production condition to assist them in solving problems.

Place your tough job in the hands of a Klem man. The assignment will be followed. The sale will be regarded as made only when the product furnished is doing the job you want done.

3 OF 20 STANDARD KLEM PRODUCTS

KLEM KOTE—Cleans, conditions ferrous metals and aluminum surfaces—imparts a phosphate coating for better paint adhesion. Non-toxic, requires no special handling pre cautions

KLEM KLEANER No. 144—Rapid, thorough, heavy duty still tank cleaner for ferrous metals Removes the most difficult soil

RUST-SOL No. 124—Concentrated phosphoric acid surface cleaner Removes oil and rust Provides slight etch to promote paint adhesion. Meets USA 3-213, TAC-ES431 and MIL-C-10578

KLEM PRODUCT of the MONTH

Klem Water Wash Compound No. 203

Reduces Spray Booth maintenance costs, keeps circulation lines, water pumps, nozzles and baffles free of paint sludge. No. 203 floats the paint, makes reclaiming of paint easier Write for details

KLEM Chemicals Inc.
14401 LANSON . . . DEARBORN, MICHIGAN

U. S. RADIATOR UPS SWARTZ

Election of E. M. Swartz as vice president, United States Radiator Corp., Detroit, was announced by W. C. McCord, president.

Swartz started his career with U.S. Radiator in 1935 as manager of the Pacific Steel Boiler Division plant, Bristol, Pa. In 1951 he was made general superintendent of steel plants. He will now be responsible for supervision of manufacturing for the company's steel division.

BOILER SALES GAIN

Continued gain in the sale of hot water and steam heating systems is indicated by statistics on boiler sales for 1952 released by the Institute of Boiler and Radiator Manufacturers. The Institute reports that shipments of all types of steam and hot water heating boilers in '52 increased by 14.5 per cent over '51 shipments. Shipments of cast iron boilers showed a gain of 19.3 per cent.

Sales of steel boilers for the first four months of 1953 were 115 per cent of sales during corresponding period a year ago, according to R. A. Locke, president and manager of the Steel Boiler Instiute.

U. OF I. NAMES PENTECOST

Joseph L. Pentecost has been named research assistant in ceramic

engineering, University of Illinois. He will be associated with the Air Force Project in the department.

MARCEL POUILLY ENTERS MFRS. REPRESENTATIVE FIELD

Marcel Pouilly, formerly with the technical service department of The

Devilbiss Company, has resigned to enter the manufacturers representative field.

He has formed The Illinois Spray and Equipment Company, with headquarters at 14902 Center Avenue, Harvey, Illinois. The new company will represent Scientific Electric, of Garfield, N. J., producers of electrostatic spraying equipment, and other manufacturers of spray finishing equipment and systems.

Pouilly is well known throughout the appliance and metal products finishing fields. Previous to his connection with DeVilbiss, he was with American Stove Company's former plant at Harvey, Ill., for 20 years.

PORCELAIN ENAMEL STRIP FILM IN COLOR NOW AVAILABLE

The Porcelain Enamel Institute has completed a new 60-frame, full-color strip film, "Porcelain Enamel, The Lifetime Material of a Thousand Uses." To accompany the film, an information script has been prepared which tells the complete porcelain enamel story.

Both the strip film and script have been produced along non-technical lines to form a narrative-type presentation covering the early history of porcelain enamel; composition of the material and its properties, enameling methods, spraying, and firing. It also shows processes and applications of porcelain enamel in the fields of appliance manufacture, architecture, plumbing fixtures, sign manufacture, and industrial uses.

The purpose of the film is to provide a usable tool which will aid industry representatives to effectively tell the porcelain enamel story to sales personnel and other employees, and for company executives to use in appearances before school and civic groups. According to Institute spokesmen, it is already finding a great variety of uses.

STANDARD PRESSED STEEL BUYS COPPER PRECISION PRODUCTS

Copper Precision Products, Los Angeles, will become a wholly-owned subsidiary of Standard Pressed Steel Co., Jenkintown, Pa., effective July

IT'S A Feather IN YOUR CAP
when you put the lightweight, efficient ARCO Control-Temp Heater to work on your hot-spray finishing jobs.
Smaller than a painter's cap, lighter than a spray gun, this amazing bantam heat exchanger, coupled with the ARCO Hot Spray System, takes a load off the painting crew . . . steps up production . . . slashes costs up to 50% . . . turns out smooth, sleek finishes in half the usual number of coats.
Put that feather in your cap now; write for a free booklet on the ARCO Hot Spray System . . . or, better still, ask for a free demonstration in your plant.
ARCO PAINTS
Quality . . . SINCE 1881
TESTED FIRST TO LAST!
THE ARCO COMPANY, 7301 BESSEMER AVENUE • CLEVELAND 27, OHIO
A SUBSIDIARY OF AMERICAN-MARIETTA COMPANY
ARCO COMPANY OF CALIFORNIA, LTD. 745 E. 59th ST. • LOS ANGELES 1, CAL.

1, according to H. Thomas Hallowell, Jr., president of SPS. Under the arrangement, SPS will further diversify its products and have manufacturing facilities in the heart of the Pacific Coast aircraft industry.

Editors Mail . . .

→ *from Page 14*

spot welder, made by the Ross Machine Tool Co., that you had illustrated as Item C-10. in the March issue of *finish?* I am very interested in the possible application of this type of tool in our welding department.

We find the New Supplies & Equipment section of your magazine most interesting and helpful.

John J. Krivec
Production Manager
Phillips & Buttorff Mfg. Co.
Nashville, Tennessee

interesting, up-to-date information

Gentlemen:

As I am on the lower run of our routing list—would appreciate my own copy of *finish*. We manufacture items used in the appliance industry and find your publication particularly interesting with up-to-date information that deserves a "Well done!".

Steve Kelsey
Barnes Manufacturing Co.
Mansfield, Ohio

the ASTM C-22 symposium

Gentlemen:

Let me say that I think that you have done a swell job in publicizing the ASTM C-22 Symposium. I was over at Wright-Patterson Air Force Base recently, and found that Bob Paris and some of his cohorts had the June copy of *finish* right at hand to show to all. They, too, were obviously quite pleased.

Dwight G. Bennett
(Symposium Committee Chm.)
Research Professor
Dept. of Ceramic Engineering
University of Illinois

supersonic washing processes

Gentlemen:

In the February issue of *finish*, reference is made to a supersonic unit adapted to washing processes and manufactured by the Fairbanks-Ward Company.

Because the unit appears to be adaptable in many of our washing machine applications for aircraft parts, we would like to secure the address of the firm for further details on the unit, and the possibility of procuring one or more for test purposes.

J. J. Harrington, Supervisor
Materials & Processes Engrg.
Northwest Airlines, Inc.
St. Paul, Minnesota

the address of Fairbanks-Ward is 666 N. Lake Shore Drive, Chicago, Ill.

"Metalacing" metal assemblies

Gentlemen:

Thank you very much for the splendid treatment you gave the Metalacing story in your May issue. Almost 500 firms have inquired about this development, many saying they saw it first in your publication. Our client, Crockatt Engineering Company, would appreciate getting eight tearsheets of the story as you used it.

John W. Fearn
John W. Fearn Associates
San Francisco, California

Have YOU Tried

W-A1

METAL CLEANER

for immersion cleaning prior to porcelain enameling? It's a specification material that has proved its worth in many enameling plants.

Same Quality
and
Same Price
for over 4 years

?

EPCO

MANUFACTURERS OF
LEPCO PRODUCTS

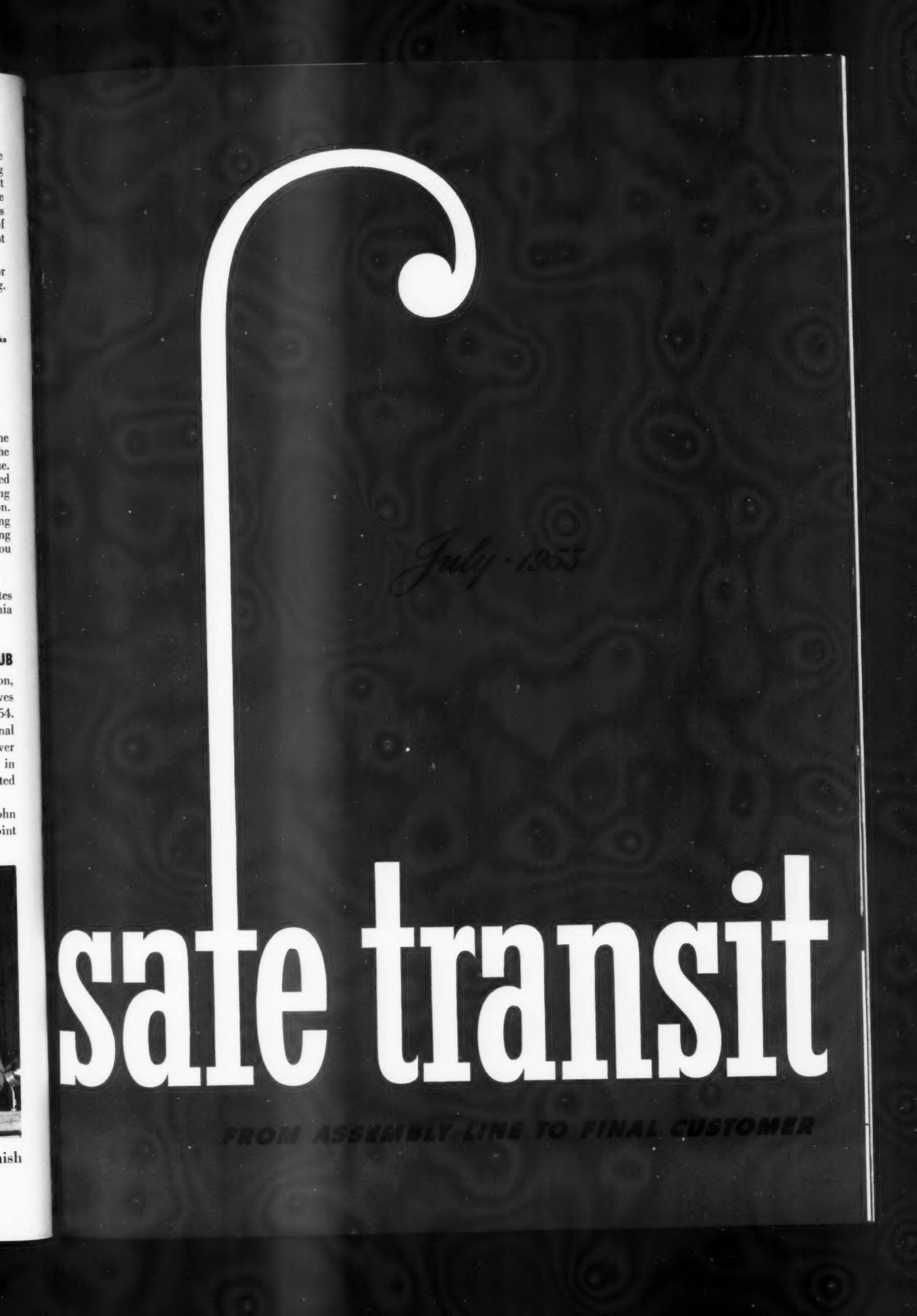
V. B. PUNDERSON COMPANY

402 SWETLAND BUILDING CLEVELAND 15, OHIO

HUTT HEADS CLEVELAND SALES EXEC. CLUB

Glenn A. Hutt, vice president, Ferro Corporation, has been elected president of the Sales Executives Club of Cleveland, Ohio, for the term 1953-54. The Cleveland Club is an affiliate of the National Sales Executives, Inc., with a membership of over 20,000 sales executives and 200 clubs located in all of the principal cities throughout the United States and the entire world.

In the photo, Hutt (right) is shown with John F. McDaniel, vice president of marketing, Hotpoint Company, at a recent meeting of the Club.


July · 1955
safe transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

Strapped shipping cartons pass Maytag Co. torture tests

BOUNCED AND BATTERED. Acme Steel Strapping holds securely as fibreboard shipping carton is vibrated and then butted on each side and bottom in Maytag Company "torture chamber."

MINIMUM MANPOWER. Top and bottom caps on carton containing Maytag automatic washer are each secured by one turn of ⅝-in. Acme Steel Strapping. Straps are tensioned by push-button operated Acme Steel pneumatic stretcher.

FINAL STEP. After strapped cartons move speedily and safely through packaging department, they are loaded into freight cars and quickly anchored with Acme Steel Strapping.

The Maytag Company of Newton, Iowa, insures S.A. (Safe Arrival) of all its automatic washers by using Acme Steel Strapping both to seal fibreboard shipping cartons, and then to anchor those cartons securely in freight cars.

The strapped carton method was adopted only after torture tests proved it superior to other methods.

An added advantage is that packing the Maytag Automatic with Acme Steel Strapping takes less than half as much manpower as a similar Maytag operation employing previous packing methods.

If you have a packaging problem, chances are Acme Steel Strapping or Acme Steel Stitching Wire methods can provide just the solution you need. Telephone your Acme Steel representative, or write Acme Steel Products Div., Dept. F73, Acme Steel Company, 2807 Archer Ave., Chicago 8, Illinois.

ACME STEEL

STRAP IT . . . STITCH IT . . . SHIP IT . . . SAFELY!

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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DANA CHASE PUBLICATIONS
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Chicago 1, Illinois
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Canyon-like effect — *is created by four-high stacks of refrigerators in Admiral Corporation's new warehouse at the company's Midwest Manufacturing Corp. plant in Galesburg, Ill. Said to be a world's record for single-story warehousing of heavy goods, the four-high system is made possible by a specially-designed lift truck with 214-inch masts. With this stacking system, Admiral can store up to 25,000 refrigerators and 3000 ranges, in addition to providing space for a warehouse office, aisles and rail and truck sidings, in a 90,000-square-foot building.*

CUSTOM DESIGNED

HEAVY-DUTY SHIPPING CONTAINERS

Container cut away to show protective design.

Base of container shows new type skid.

WELBILT streamlines packing methods

Welbilt Stove Company has been shipping stoves in International's special design "Cap and Tube" shipping container for 18 months with these successful results:

- **Quick, easy packing—saves 33⅓% on labor.**
- **Stress at attachment points eliminated—no bolts or fastening to skids.**
- **Claims for damage in transit less than ½ of 1%.**
- **Warehouse dust and dirt eliminated—stove completely encased in protective covering.**
- **Greater ease in unpacking.**
- **Large printing surfaces permit strong product identifications.**

This highly efficient container was custom-designed and thoroughly tested in our modern Georgetown Container Laboratory—an official testing laboratory certified by the National Safe Transit Committee of the Porcelain Enamel Institute.

We would like to tell you more about the development of this and other specially designed containers. Write to any of the manufacturing plants listed below.

GRAND AWARD!

International won the only Grand Award given at the First Annual Competition of the Fibre Box Association. All seven International entries won ribbons!

International Paper company

CONTAINER DIVISION

220 East 42nd Street, New York 17, N. Y.

Los Angeles 54, Cal. 5120 South Soto St.
Kansas City 3, Kan. 2102 Kansas Ave.
Somerville 45, Mass. Clyde & Warwick Sts.
Wooster, Ohio 689 Palmer St.
Springhill, Louisiana
Georgetown, So. Carolina
St. Louis 11, Mo. 7901 Michigan Ave.
Chicago 38, Ill. 5133 West 65th St.
Whippany, New Jersey

THE TRANSIT LINE

SAFE TRANSIT—AND THE DEALER

(a guest editorial)

We have always taken pride in the appliance-radio-television industry's ability to engineer and manufacture quality products. When they came off the production lines and underwent final inspection, we knew they were soundly designed and soundly built. And with the final crating and shipping, we felt that our job was well done. It was — up to a point. What we were neglecting was the vastly important step of seeing that they arrived in distributor's warehouses, thence to the dealers' floors, and finally in consumer's homes in as good condition as when they left the factory.

The headache of damaged products

Because, as everyone in this business knows, the post-war years saw a lamentably high percentage of breakage and damage to products in transit. Smashed crates, crushed cartons, chipped enamel, scratched paint, broken or missing parts all were the order of the day. It was a headache to the manufacturers who saw constantly increasing volume of goods returned; it was a headache to the rail and truck carriers who were swamped with claims; it was even a bigger headache to distributors and dealers who needed the merchandise and had to disappoint customers. It was a condition that exacted a toll of millions of dollars annually.

Too often, when something is wrong in an industry, a lot of lip-service is paid the condition, speeches are made and buck-passing indulged in — except when the pocketbook is being hurt. In this case, the pocketbook was taking a beating and something was done.

The aspirin of Safe Transit

The medium was the National Safe Transit Committee, sponsored by the Porcelain Enamel Institute, and the method was the development of the Pre-Shipment Testing Plan. This summer marks the fifth anniversary of this voluntary, cooperative program, which has won the support of manufacturers, carriers, packaging and shipping groups and our industry's distributors. In practical operation, the testing plan has more than proved its ability to make startling reductions in both handling and transit damage to the products of participating manufacturers. This means that distributors and dealers have fewer damaged products in storage and fewer claims to be filed. It has been aspirin for the headaches of all the groups hurt by damaged goods.

So far, so good. The manufacturer had made a good product and now both he and the carriers have done everything possible to get it to distributors and dealers in A-1 condition. But before the range or the TV set or the washer gets into the hands of the customer, distributors and dealers do a lot of handling, too. Tests have proved, for instance, that if a crated appliance is merely rested on edge, and the other edge allowed a free drop of only 12 inches, the resultant shock is equivalent to the worst that can happen during transit. So pass the word on to your boys in the shipping department; be sure that any claims you file don't originate in your own place.

The distinctive Safe Transit Label

Space does not permit us to go into any detail here on the pre-shipment testing plan. Suffice to say that it involves the testing of the complete packaged product by the manufacturer, or by an accredited laboratory, *before shipments are made to distributors or dealers.* Crates and cartons undergo rigid tests to determine their ability to withstand shock. When manufacturers adopt packaging methods designed to minimize or eliminate the possibility of damage during in-transit shipment, they are "certified" and you can recognize the product of such a manufacturer by the distinctive orange "Safe Transit" label affixed to the package or crate. That label means that the manufacturer has done his damndest to get his goods to the dealers in good shape. What's more, the label affects freight handlers all along the line. They recognize it and respect it.

Thanks to the 120-odd manufacturers at present certified to paste the "Safe Transit" sticker on their merchandise, plus the railroads and truckers who deliver them, the whole problem of damaged goods is in the way of being licked. Dealers can help by asking their own suppliers to use the pre-shipment testing plan, qualifying for the label to help influence handlers all along the line, and educating their own help to cut down handling losses.

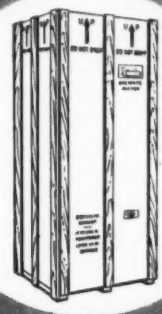
No money in storing filing claims

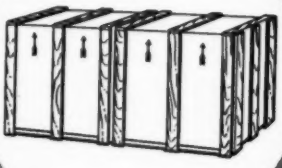
After all, you make money by moving merchandise — not by storing damaged goods and filing claims. . .

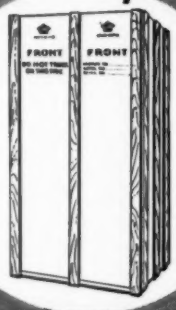
Laurence Wray

EDITOR — ELECTRICAL MERCHANDISING

WATKINS *Engineered* SHIPPING CONTAINERS





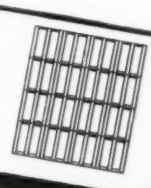


ASSEMBLY is speeded up with this easy-to-handle container. The assembly crews are all for packing the Watkins Way.

HANDLING shocks in the factory, in transit, and during delivery are resisted by the wood cleats, glued tube mat construction.

STORING problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.

STACKING is easy and safe, due to the supporting strength (minimum 4 tons on most containers) that is *engineered* into the Watkins design.



Watkins Containers are *Engineered* containers—scientifically designed for *light weight* without sacrificing the STRENGTH factor so important for the safe delivery of your product. With a Watkins Container you get stacking strength (without distortion) plus a high degree of shock resistance.

Watkins *engineered* Containers give your product *complete* protection—protection from the hazards of all normal handling and transportation—plus protection against dirt and dust, and the accidental scratching of fine finishes.

You can get 100% protection in a container that is 75% assembled when it arrives at your plant. And completing the assembly is a quick and easy job on the packaging line.

If you haven't shipped "The Watkins Way," you owe it to your finished products to try this cleated, corrugated container soon.

When you change to Watkins, you can use the advertising value of the "Traveling Billboard"—a two-color message on all four sides.

THERE IS A WATKINS CONTAINER MADE NEAR YOU

These companies build WATKINS *Engineered* CONTAIN

Cornell Paperboard Products Co. ..... 1514 E. Thomas Ave., Milwaukee
Cozier Container Corp. ..... 446 East 131st Street, Cleveland
Crate-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc.
..... 10901 Russett Street, Oakland, Calif
Dura-Crates, Inc. .....940 East Michigan Street, Indianapolis, Ind
General Box Co. ..... 1825 Miner St., Des Plaines, Illinois
16th and Maple Sts., Louisville, Ken
Hemb & Martin Mfg. Co. ..... Watseka, Ill
Illinois Box & Crate Co. ..... 811 Center Street, Plainfield, Ill
Kieckhefer Box & Lumber Co. ..... 1715 West Canal Street, Milwaukee
Lane Container Corp. ..... 10212 Denton Road, Dallas, T
Lewisburg Container Co. ..... 243 Singer Street, Lewisburg
Livingston Wood Manufacturing, Ltd. ..... Tillsonburg, Ontario, Ca
Love Mfg., Inc., ... 608 South Commerce Street, Wichita, Ka
Utility Crate Corporation .... 1985 E. 16th Street, Los Angeles 21, Calif

—an inquiry to any of these companies will get prompt attenti

The · WATKINS CONTAINER · Manufacturers

Packing Odin ranges for safe shipment

crepe wadding, pressure-sensitive and paper-coated metal tapes for interior packaging

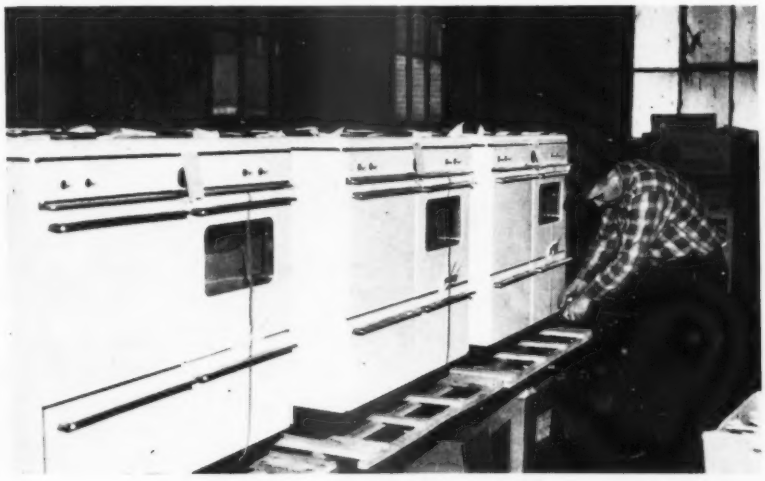
by Walter Rudolph

PACKAGING of Odin ranges has received extensive study, and is a fine example of such work in the industry. Main side and manifold panel, press-fits, are secured with ¾ inch pressure-sensitive tape. A hardwood strip, wired to burners, holds grates securely to the range top; crepe packing pieces are inserted under grate edges prior to this packaging, to prevent scoring during shipment.

Tape also secures lift covers to the range top. Odin does a sub-assembly job on paper-coated metal tape that runs from between the upper door and manifold and lower drawers, to a special hooking arrangement on the flange of the range base. This shipping strap keeps the top of the lower drawer from moving during shipment; it is manually tightened, making the entire side of the range practically vibration free.

The range vent riser body is placed in the oven, "kitty-corner," with its ends packed in cardboard. A polyethyelene bag holds various controls and hardware, for visual inspection. All rotisserie parts are carton-packed, as are broiler parts. The "snap-on" backrail is packed in a special carton, too, and wedged at the bottom front of the overall packing. Domestic shipments wind up with a collapsible slip-over container, with strip-nailing to complete the packaging.

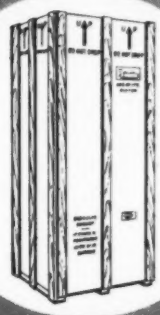
Of late, Odin has been doing more and more export business. Ranges intended for this trade are given extra-strength packaging by the nailing of separate box panels over the completed assembly, at the end of the shipping line.

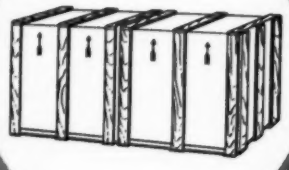


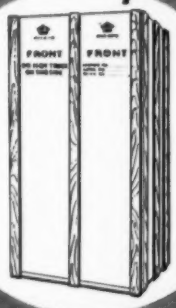
Above: Careful planning for packaging gives Odin ranges maximum protection. Here a special shipping strap is tightened at base flange hookup.

Right: Unique "snap on" backrail, with electrical connections that plug in, is packaged in carton, placed like this before container is slid over the finished product.

WATKINS *Engineered* SHIPPING CONTAINERS







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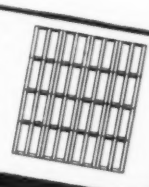

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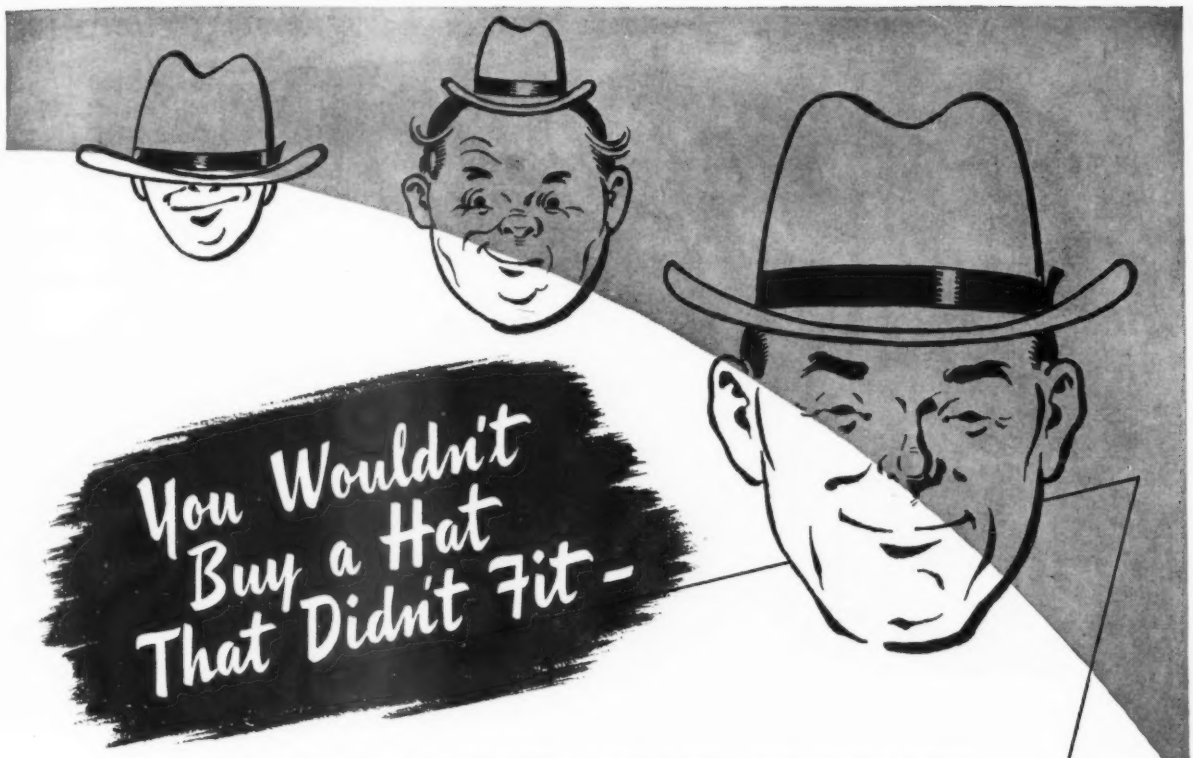
127 Safe Transit Certifications

THE following companies are certified under the National Safe Transit Program.

A-B Stoves Division
Detroit-Michigan Stove Company
Detroit, Michigan
Active Tool & Manufacturing Co.
Detroit, Michigan
Admiral Corporation
Chicago, Illinois
AllianceWare, Inc.
Alliance, Ohio
Altorfer Bros. Company
Peoria, Illinois
American Kitchens Division
Avco Mfg. Corp.
Connersville, Indiana
Apex Electrical Manufacturing Co.
Cleveland, Ohio
Automatic Washer Company
Newton, Iowa
Barrows Porcelain Enamel Company
Cincinnati, Ohio
Beam Manufacturing Company
Division of Solar Corporation
Webster City, Iowa
The Bellaire Enamel Company
Bellaire, Ohio
Belmont Stamping & Enameling Co.
New Philadelphia, Ohio
Bendix Home Appliances
Division — Avco Mfg. Corp.
South Bend, Indiana
Boston Stove Foundry Company
Reading, Massachusetts
Bryant Heater Division
Affiliated Gas Equipment, Inc.
Cleveland, Ohio
Bryant Heater Division
Affiliated Gas Equipment, Inc.
Indianapolis, Indiana
Bryant Heater Division
Affiliated Gas Equipment, Inc.
Tyler, Texas
Caloric Stove Corporation
Topton, Pennsylvania
Canadian General Electric Co., Ltd.
Montreal, Quebec, Canada
Canadian Westinghouse Company, Ltd.
Hamilton, Ontario, Canada
Canton Stamping & Enameling Co.
Canton, Ohio
Central Rubber & Steel Corporation
Findlay, Ohio
Chambers Corporation
Shelbyville, Indiana
Chicago Vitreous Enamel Product Co.
Cicero, Illinois
Conlon Bros. Mfg. Co.
Chicago, Illinois
Conlon-Moore Corporation
Chicago, Illinois
Continental Water Heater Co.
Los Angeles, Calif.
Cribben and Sexton Company
Chicago, Illinois
Crosley Division, Avco Mfg. Corp.
Richmond, Indiana
Crosley Division, Avco Mfg. Corp.
Nashville, Tennessee
Crunden Martin Manufacturing Co.
St. Louis, Missouri
Davis Products Co.
Niles, Michigan
Day & Night Division
Affiliated Gas Equipment, Inc.
Monrovia, California
Dearborn Stove Company
Chicago, Illinois
Deepfreeze Appliance Division
Motor Products Corporation
North Chicago, Illinois
Detroit-Michigan Stove Company
Detroit, Michigan
The Dexter Company
Fairfield, Iowa
Dixie Products, Inc.
Cleveland, Tennessee
The Duchess Company
Alliance, Ohio
Duo-Therm Division
Motor Wheel Corporation
Lansing, Michigan
Eagle Range & Mfg. Company
Belleville, Illinois
Easy Washing Machine Corporation
Syracuse, New York
The Enamel Products Company
Cleveland, Ohio
Fedders-Quigan Corporation
Buffalo, New York
Fedders-Quigan Corporation
Maspeth, Long Island, N. Y.
Federal Enameling & Stamping Co.
Pittsburgh, Pennsylvania
Firestone Steel Products
Akron, Ohio
Firestone Steel Products
Wyandotte, Michigan
The Fletcher Enamel Company
Dunbar, West Virginia
Florence Stove Company
Kankakee, Illinois
Florence Stove Company
Lewisburg, Tennessee.
The Floyd-Wells Company
Royersford, Pennsylvania
Frigidaire Division
General Motors Corporation
Dayton, Ohio
General Electric Company
Erie, Pennsylvania
Geneva Modern Kitchens, Inc.
Geneva, Illinois
Globe American Corporation
Kokomo, Indiana
Hardwick Stove Company
Cleveland, Tennessee
Haskell Manufacturing Co., Inc.
Pittsburgh, Pa.
Heintz Manufacturing Company
Philadelphia, Pennsylvania
Holland-Rieger Division
Apex Electrical Mfg. Co.
Sandusky, Ohio
Hotpoint Company
Chicago, Illinois
Ingram-Richardson, Inc.
Frankfort, Indiana
International Harvester Company
Evansville, Indiana
Jordon Refrigerator Co., Inc.
Philadelphia, Penna.
Kaiser Metal Products, Inc.
Bristol, Pennsylvania
Kresky Manufacturing Co., Inc.
Petaluma, California
Kuehne Manufacturing Co.
Mattoon, Illinois
Landers, Frary & Clark
New Britain, Connecticut
A. J. Lindemann & Hoverson Co.
Milwaukee, Wisconsin
Lisk-Savory Corporation
Buffalo, New York
Luxra Company
Atchison, Kansas
Magic Chef, Inc.
Cleveland, Ohio
Magic Chef, Inc.
Lorain, Ohio
Magic Chef, Inc.
St. Louis, Missouri
Majestic Manufacturing Co.
St. Louis, Missouri
Malleable Iron Range Company
Beaver Dam, Wisconsin
Malsbary Manufacturing Co.
Oakland, California
Manitowoc Equipment Works
Manitowoc, Wisconsin
The Maytag Company
Newton, Iowa
McCray Refrigerator Company, Inc.
Kendallville, Indiana
Meadows Division, Thor Corporation
Bloomington, Illinois
Midwest Manufacturing Company
Division of Admiral Corp.
Galesburg, Illinois
Moffats, Limited
Weston, Ontario, Canada
The Moore Enameling & Mfg. Co.
West Lafayette, Ohio
Mt. Vernon Furnace & Mfg. Co.
Mt. Vernon, Illinois
Murray Corporation of America
Scranton, Pennsylvania
Murray Manufacturing Company
Murray, Kentucky
Nash-Kelvinator Corporation
Grand Rapids, Michigan
Nesco, Inc.
Milwaukee, Wisconsin
Newark Stove Company
Newark, Ohio
Norge Division, Borg-Warner Corp.
Effingham, Illinois
Norge Division, Borg-Warner Corp.
Herrin, Illinois
Norge Division, Borg-Warner Corp.
Muskegon Heights, Michigan
Odin Stove Manufacturing Co.
Erie, Pennsylvania
O'Keefe & Merritt Company
Los Angeles, California
Payne Furnace Division
Affiliated Gas Equipment, Inc.
Monrovia, California
Peerless Manufacturing Corporation
Louisville, Kentucky
Perfection Stove Company
Cleveland, Ohio
Philco Corp., Refrigerator Division
Philadelphia, Pennsylvania
Prentiss-Wabers Products Co.
Wisconsin Rapids, Wisconsin
Quincy Stove Mfg. Co.
Quincy, Illinois
Ranney Refrigerator Company
Greenville, Michigan
Remington Corporation
Auburn, New York
Republic Stamping & Enameling Co.
Canton, Ohio
Revco, Inc.
Deerfield, Michigan
Reznor Manufacturing Company
Mercer, Pennsylvania
Rheem Manufacturing Company
Chicago, Illinois
Geo. D. Roper Corporation
Rockford, Illinois
Milton Roy Company
Philadelphia, Pennsylvania
Samuel Stamping & Enameling Co.
Chattanooga, Tennessee
Seeger Refrigerator Co.
Evansville, Indiana
Seeger Refrigerator Co.
St. Paul, Minnesota
Servel, Inc.
Evansville, Indiana
A. O. Smith Corporation
Kankakee, Illinois
Speed Queen Corp., Ironer Division
Algonquin, Illinois
The Tappan Stove Company
Mansfield, Ohio
Temco, Inc.
Nashville, Tennessee
Thor Corporation
Chicago, Illinois
Universal Major Elec. Appliances, Inc.
Baltimore, Maryland
United States Stamping Company
Moundsville, West Virginia
Victor Products Corporation
Hagerstown, Maryland
Westinghouse Electric Corporation
East Springfield, Mass.
Westinghouse Electric Corporation
Mansfield, Ohio
Westinghouse Elec. Corp.,
Beaver, Pa.
Westinghouse Electric Corp.
Sunbury, Pennsylvania
S. S. White Dental Mfg. Co.
Staten Island, New York
York Corporation
York, Pennsylvania



WOULD YOU SHIP YOUR PRODUCT IN A MISFIT CONTAINER?

The wrong size of hat may look funny, but the wrong shipping container is no laughing matter. More often than not, it is the cause of excessive shipping losses, damage claims and transportation charges.

SUPERSTRONG laboratories are maintained for the design of perfectly balanced boxes and crates that will enable a product such as yours to be shipped safely, compactly and economically.

Nearly a century of experience and dependability recommends SUPERSTRONG as a source of known quality for your shipping container requirements.

WIREBOUND BOXES and CRATES
WOODEN BOXES and CRATES
CORRUGATED FIBRE BOXES
BEVERAGE CASES
STARCH TRAYS · · · PALLETS

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS
REG. U.S. PAT. OFF.

RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

CHIPPAFLEX Lined with KIMPAK*

A SPECTACULAR NEW DEVELOPMENT IN PACKAGING MATERIAL

A combination of famous Chippaflex flexible corrugated and Kimpak* gives you the advantage of outside shock resistance and a soft, non-abrasive cushion that protects the surface of highly polished products as well as the most delicate items.

An Ideal Packaging Material For:

- Appliances
- Electronic Items
- Furniture
- Highly Polished Items
- Drugs and Chemicals
- Giftwares
- Storage and Moving
- Glassware and Dishes
- Machinery and Parts
- Plywood Sheets
- Wood and Metal Doors
- Other Millwork Products
- Metal Screens and Sashes
- 100 Other Uses

Available in all grades including the new #301 — in sheets, sleeves, built-up single-face pads, flexible and rigid corner pads and corner posts.

Call, Wire or Write for information on how this new material can solve your packing problems.

A Registered Trade Mark Of The Kimberly-Clark Corporation

Chippewa

2425 So. Rockwell Street
Chicago 8, Illinois

PAPER PRODUCTS CO., INC.

Eastern Plant: South Hackensack, New Jersey

BIGELOW-GARVEY LAB. CERTIFIED

The National Safe Transit Committee has announced that Bigelow-Garvey Lumber Co., Chicago, is the 23rd testing laboratory to be certified under the NST Program.

DON L. QUINN FIRM PURCHASED BY BALSTER AND ZIEGLER

Wilmer J. Balster and Peter J. Ziegler have announced their purchase of The Don L. Quinn Co., Chicago, container and materials testing laboratory. Mr. Quinn, head of the laboratory, died last February 27.

Balster, who is now president, was associated with the laboratory from 1927 through 1952. Ziegler, vice president, joined the firm in 1940.

23 SAFE TRANSIT LABORATORIES

With other certifications pending, 23 laboratories are already participating in the NST Program.

The certified laboratories include:

American Gas Associations Labs.
Los Angeles, California

Atlas Plywood Corporation
Lawrence, Massachusetts

Bigelow-Garvey Lumber Company
Chicago, Illinois

Chicago Mill and Lumber Company
Chicago, Illinois

Container Corporation of America
Chicago, Illinois

Container Laboratories, Inc. (2)
Chicago and New York City

Cozier Container Corporation
Cleveland, Ohio

Dura-Crates, Inc.
Indianapolis, Indiana

The Fairfield Paper & Container Co.
Baltimore, Ohio (project 1-a only)

Fort Wayne Corrugated Paper Company
Fort Wayne, Indiana

General Box Company
Des Plaines, Illinois

The Hinde & Dauch Paper Company
Sandusky, Ohio

Inland Container Corporation
Indianapolis, Indiana

International Paper Company
Georgetown, South Carolina

The Mengel Company
Louisville, Kentucky

Ohio Boxboard Company
Rittman, Ohio

Package Research Laboratory
Rockaway, New Jersey

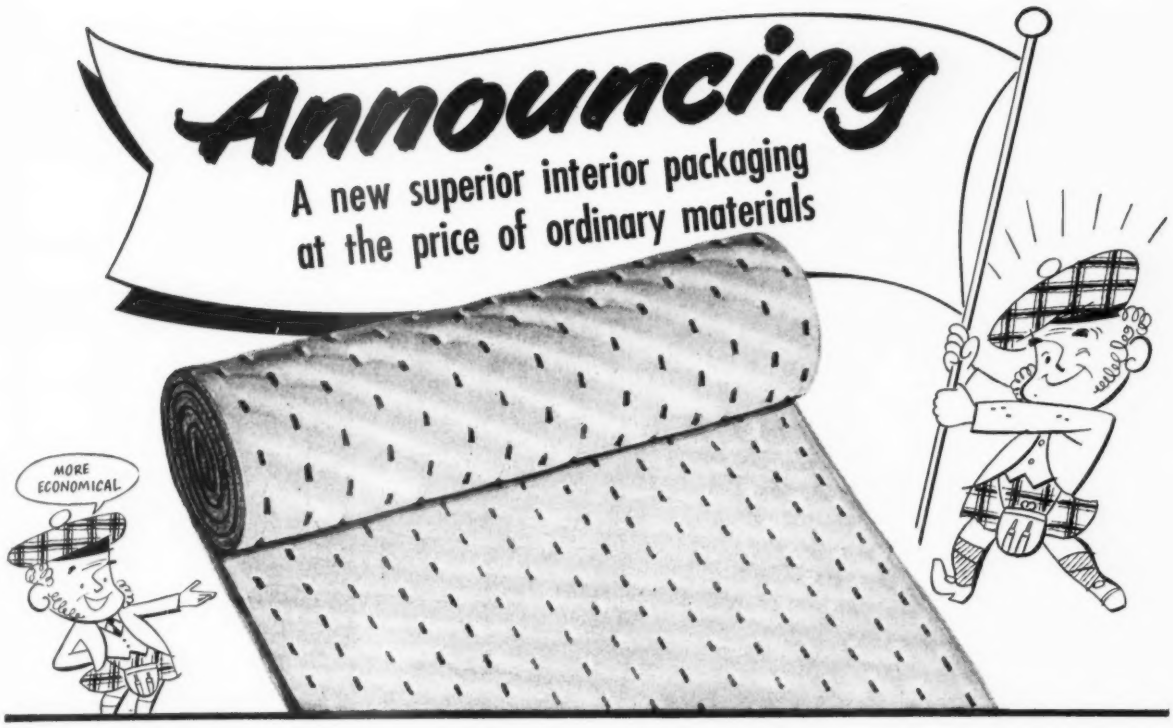
Packaging Service Corporation
Wyncote, Pennsylvania

The Don L. Quinn Company
Chicago, Illinois

Rathborne, Hair and Ridgway Box Co.
Chicago, Illinois

Twin Cities Container Corporation
Benton Harbor, Michigan

U. S. Testing Company, Inc.
Hoboken, New Jersey



"Standard" KIMPAK Type 301

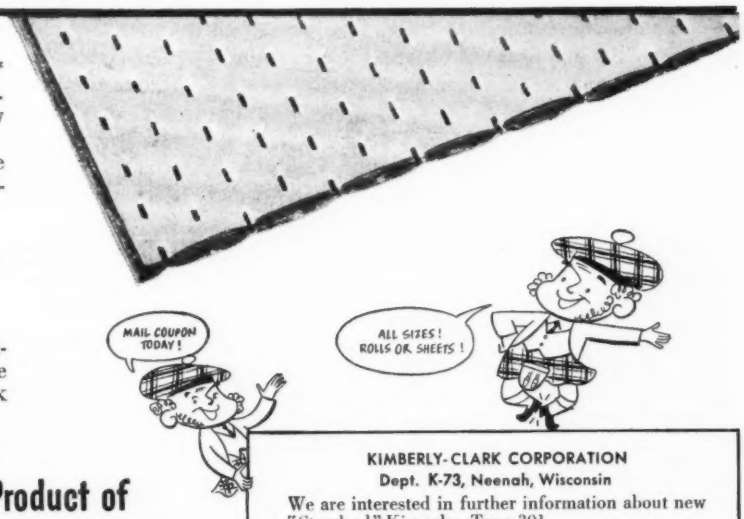
The new economical, general purpose interior packaging material

Now — the unmatched protection of KIMPAK* at a price that challenges low-cost materials. That's the remarkable advantage of new "Standard" KIMPAK — Type 301!

And this latest addition to the KIMPAK line is designed with these general-purpose features to meet your particular needs:

- Complete range of standard thicknesses
- Widest selection of standard backing papers
- Plain or embossed at the same low price
- Available in rolls or sheets
- Widths from 2" to 60"

No other interior packaging material compares with New "Standard" KIMPAK — Type 301. To convince yourself, contact your KIMPAK distributor or mail the coupon today.



KIMPAK
INTERIOR PACKAGING
*T. M. REG. U. S. & FOREIGN COUNTRIES

A Product of
Kimberly-Clark

KIMBERLY-CLARK CORPORATION
Dept. K-73, Neenah, Wisconsin

We are interested in further information about new "Standard" Kimpak — Type 301.

*Name*_____

*Address*_____

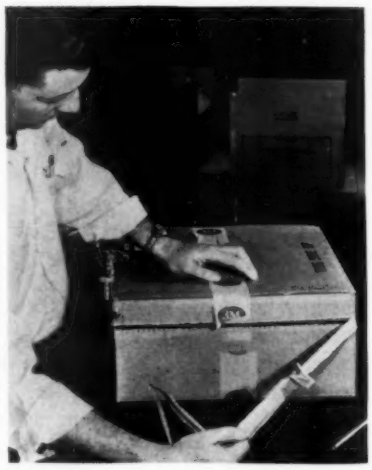
*City*_____ *Zone*____ *State*_____

*Our product is*_____

New Supplies and Equipment

71-S. Tear-strip tape for cartons

With this new tear-strip tape, heavy duty fibre board containers



can be opened as easily as a pack of cigarettes. The tape is adhered to the inside of the container, with only a small tab on the outside.

To open: pull up the tab, zip it around the carton's sides, and the lid is ready to lift off. Acetate film is used as the backing for the new tape which has been successfully used on boxes with bursting strengths up to 350 pounds.

More Information

For more information on new supplies, equipment and literature reviewed here, write to us on your company stationery, or fill out the order form on page 56.

73-S. Steel strapping guide for packing and shipping use

This revised 15th edition of the "Guide to Better Shipping Catalog" contains latest information on use of strapping with pallets, bundles, crates, and in production line packaging. Contains suggestions on new carloading procedures. A wide selection of strapping tools and equipment for every application is illustrated. Includes information on high-speed power strapping machines.

74-S. Brochure on plastic bags, and liners for packaging

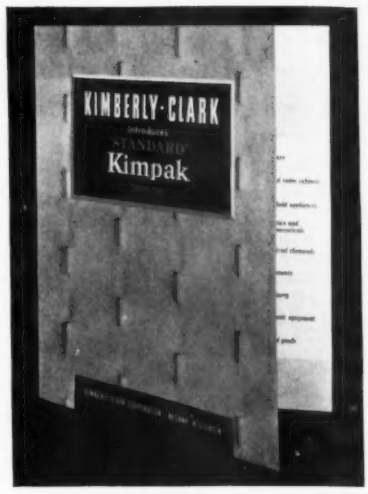
"Packaging for Industry" is the title of a new brochure dealing with flexible packaging. It is published by a leading producer of paper, foil and plastic bags and liners, and is based on the theme "Protecting the Products of Industry."

72-S. Fork truck with hydraulic powered load stabilizer

As an attachment for fork trucks with capacities up to 6000 pounds, this hydraulic-powered load stabilized is designed for safe transportation of unstable and semi-stable loads. It is also designated for stable loads which are subject to rough travel where they might be bounced off the skid or pallet on which they ride. In addition to carrying loads more safely, the stabilizer allows fork truck operators to stack at great heights with safety.

75-S. New interior packaging

A new general-purpose interior packaging material was introduced to



the trade this month. It is designed to meet the demand for a general-purpose packaging element for use by manufacturers of fragile and frangible products. The "natural" tan colored material is available in a complete selection of standard backing papers. It may be ordered plain or embossed, without upcharge, and comes in rolls or sheets from 2" to 60" widths.

76-S. Cellulose-padded steel strapping

This steel strapping is faced with soft fluffy cellulose padding, and is ideal for holding the doors of refrigerators and other kitchen appliances tightly closed during shipment, without damaging the fine finishes of the appliances. The strap is pre-scored to desired lengths and ready for immediate use.

77-S. Light-weight heavy-duty wirebound box containers

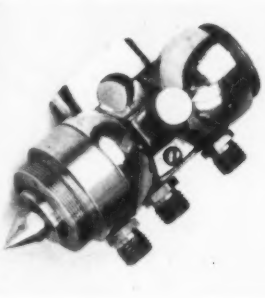
Of special interest to shippers of fairly large, weighty items, heretofore requiring costly, hand-made boxes, are these new king-size wirebound boxes. One such box has been designed to carry a piece of equipment weighing 3000 pounds. The container measures 63" x 93"

x 39″, and weighs 35 pounds less than the former crate.

78-S. Self-sealing protective wrapping for metal parts

A new protective material for wrapping metal parts consists of a specially-coated wrap that sticks only to itself. Simply wrap it over the parts, press it together, and the package is sealed.

The new wrapper is designed to make a tight, dust-proof, water-repellent, tamper-proof wrap that keeps out dirt and foreign matter, and protects finely-finished metal surfaces from scratches, abrasion and fingerprints. It is designed for small subassemblies, replacement kits or other small units. The loose parts can be wrapped together to store and ship, with no loss or damage to small parts.



The wrapper sticks only to itself, so it can't damage metal surfaces. It is quick to use, requiring no fastenings to seal it. It is adaptable to either manual or mechanical production packaging, and is available in rolls, printed or plain, 600 lineal feet long, and in widths from 12 to 48 inches.

How to make 150 containers disappear

Another example of packaging magic that couldn't be performed without Signode Steel Strapping!

The pallet load shown here contains 150 sub-assemblies, nested on returnable wooden trays, packaged for easy handling and shipping by strong bands of tensioned Signode Steel Strapping.

This method of packaging eliminated the use of 150 individual containers, and the materials needed to pack and seal them. Units were handled *once*—at the assembly line, where they were placed on the trays. Strapped to the pallet base, which also served as a tray, the trays became a single, pilfer-proof unit, easily handled by *one* man and a fork truck!

If you now ship by pallet or have products which can be shipped that way, and the economies apparent in this method of product packaging, handling and protection interest you, we will gladly supply detailed facts. Write Signode Steel Strapping Co., 2639 N. Western Ave., Chicago 47, Ill. Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world-wide.

SIGNODE Steel Strapping Co.

SEND FOR FOLDER SHOWING 6 BASIC WAYS OF UNITIZING

ST-13

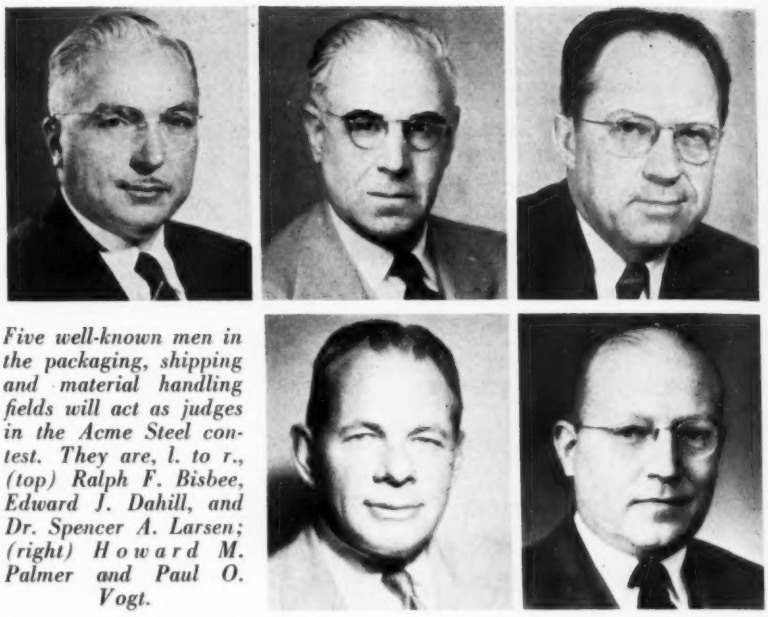
ACME STEEL INDUSTRY-WIDE STEEL STRAPPING CONTEST

Acme Steel Company, Chicago, has announced an industry-wide contest to help all industry do a better job of packing, shipping and handling products and materials. The contest is open to employees and officials of any firm, industry or organization other than manufacturers of flat steel strapping, their subsidiaries, and their advertising agencies.

Each entry will be judged solely on the basis of its value to the user, and its possible value to others in the shipping and handling of materials. Awards will be made to those entries, which in the opinion of the judges, are the best examples of successful use of flat steel strapping (any brand) in improving packing, shipping and handling operations. The contest ends July 20, 1953.

First grand prize will be an all-expense trip to Bermuda for two, or $1000 cash. Second prize will be $500, and third prize will be $250. Fifteen additional prizes of $100 each will also be awarded.

Contest judges are: Ralph F. Bisbee, general chairman of the National Safe Transit Committee, and



Five well-known men in the packaging, shipping and material handling fields will act as judges in the Acme Steel contest. They are, l. to r., (top) Ralph F. Bisbee, Edward J. Dahill, and Dr. Spencer A. Larsen; (right) Howard M. Palmer and Paul O. Vogt.

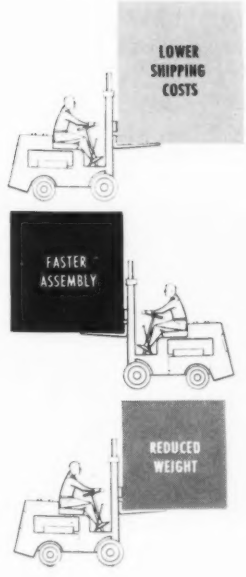
manager of the quality control department, Westinghouse Electric Corp., Mansfield, Ohio; Edward J. Dahill, chairman of the National Container Committee and chief engineer of the Freight Loading and Container Bureau of the Association of American Railroads; Dr. Spencer A. Larsen, director of the Materials Management Center, Wayne University, Detroit; Howard M. Palmer, president of the Material Handling Institute, and general sales manager of Lewis-Shepard Products, Inc., Waterton, Mass.; Paul O. Vogt, national chairman of the board of directors of the Society of Industrial Packaging and Materials Handling Engineers, and consultant of packaging, warehousing, and shipping, manufacturing services division of General Electric Co., Schenectady.

***A record 27,000 visitors** — jammed Philadelphia's Convention Hall for the 1953 National Materials Handling Exposition, the largest industrial show in the United States. Photo shows a few of some 340 exhibitors of materials handling equipment.*

No matter where they're bound

SHIP THEM WIREBOUND !

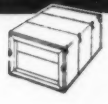
and Stack 'em High As You Like



Modern handling methods call for quick and easy storage—in a minimum of space. The special Wirebound construction of strong steel wire and light, tough wood suits itself to modern methods of materials handling. You stack 'em fast, efficiently and high as you like. Shown above are some high-stacked Wirebound pallet boxes that are used for inter-plant shipments and parts storage. No other container is so perfectly suited to fork truck handling. They appeal to economy-minded management. We will be pleased to give you all details on versatile Wirebounds, regular or pallet boxes and crates.

MAIL THIS COUPON NOW!

Wirebound
BOXES & CRATES



WIREBOUND BOX MANUFACTURERS ASSOCIATION

Room 1100, 327 South LaSalle Street, Chicago, Illinois

☐ Have a sales engineer give me the whole story

☐ Send me a copy of "What to Expect from Wirebounds"

Name_____

Firm Name_____

Address_____

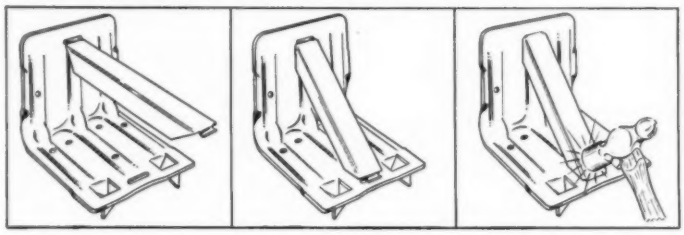
City, Zone and Sate_____

INCREASED *"Holding Power"*

DOUBLE the number of PRONGS...
DOUBLE the "holding power"
IN

DEVILCLAW
BLOCKING ANGLES

(Patents Pending)



1. Insert tongue of No. 41 K-STRUT into top socket of No. 44 Blocking Angle.

2. Place other end of K-STRUT on base of No. 44 Blocking Angle.

3. Hammerblow sets other tongue of K-STRUT into bottom socket of Blocking Angle.

NOW

FOUR PRONGS deliver increased "holding power" to this new Devilclaw No. 44 Angle.

Our newly patented K-STRUT, when added to our standard No. 44 Devilclaw Angle, gives the shipper a "holding power" against impacts up to 28,000 pounds.

DEVILCLAW
No. 41 K-STRUT
(Patents Pending)

When installed on our No. 44 Blocking Angle, the whole unit develops "holding power" to withstand impacts up to 28,000 pounds.

A letterhead request, referring to this advertisement, will bring Free Samples for testing in your own plant.

Our new Devilclaw No. 44 is the *superior* Car Blocking Angle you've been waiting for! A new DOUBLE PRONG design with DOUBLE the "holding power". Made of 11 gauge steel in a size 4″ wide, 4″ deep by 4″ high in the pattern illustrated.

NOW . . . four *husky prongs* (double the usual number) give *more protection* to boxed, crated or palletized shipments.

For "increased holding power" against *severe impacts* during transit, we offer the newly patented Devilclaw No. 41 K-STRUT. Made of 11 gauge steel channel with easy locking tongues, the K-STRUT *plus* our No. 44 Angle, develops "holding power" to *resist impacts up to 28,000 pounds!*

Save Money, Speed Loading, Prevent In-Transit Damage . . . by loading with Devilclaws!

CAR BLOCKING, INC. MANUFACTURERS

1952 KIENLEN AVE. ST. LOUIS 20, MO.

BLOCKING DEVILCLAW ANGLES

All-steel "automatic" incline-impact tester

sturdily-built, motor-driven incline-impact machine has automatic lift and release, and is designed to be virtually friction-free

A NEW incline-impact testing unit has been designed and fabricated for conducting pre-shipment tests on packaged products. First installation was made in the laboratory of a leading producer of crates and containers. Although the design and sturdy construction of the equipment adapts it for use with a wide variety of products, including heavy loads, the designer had in mind the specific requirements of the home appliance and allied metal products field.

The equipment includes an all-steel welded and properly braced framework, and an all-steel backstop (the backstop has a wood core for noise reduction). There are a number of desirable features in the construction and the operating mechanism that have not been normally included in the early equipment or "home made" units.

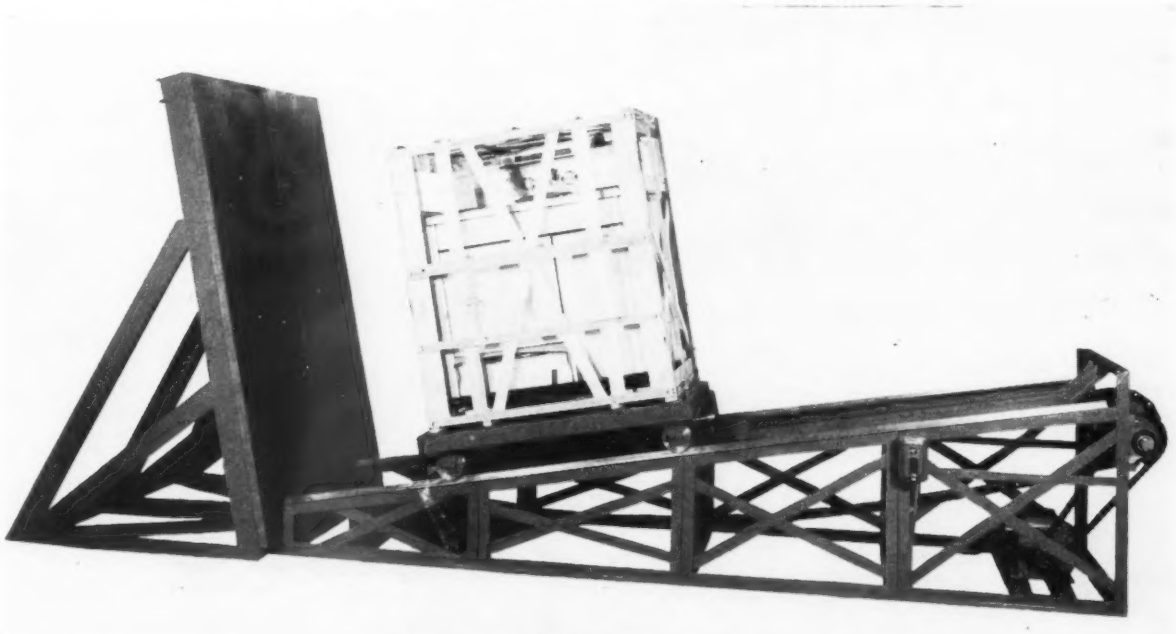
The all-steel dolly on which the packaged product is loaded travels along a double "V" track (36″ center) with the four "V" wheels turning in oilite bearings. The packaged product is raised into testing position by means of a motor and speed reducer combination, driving a malleable iron heavy-duty guiding chain. A hand lever, mounted within easy reach of the operator, automatically engages the dolly with the traveling chain, which in turn pulls the loaded dolly up the 10° incline until automatically released.

The release mechanism is set up for movement anywhere along the center guide track at 6″ intervals to afford flexible impact zone control. Due to minimized friction, the distance of travel is normally less on other types of testers now in use.

The incline bed comes in three-foot sections, so that equipment can be installed to any desired length. The entire unit is demountable for ease of transportation and installation. All sections will pass through the average door. The design permits the production of dollies and back stops to fit individual plant requirements. Other parts have been standardized.

Further information on this new incline-impact tester may be obtained by writing *finish*.

A crated range is shown being subjected to an impact test on the new machine.



NST MAILBAG

Nickel Plate Road

To: NST Educational Committee

I wish to advise that I found the first "Industry-Wide Safe Transit Conference" to be very interesting and educational.

I firmly believe that NST has embarked upon a program that will bring results to shipper and carrier alike, to the point where household appliances, radios, television sets, etc., will be transported from shipper to customer without damage, and in turn, the third party vitally interested (the customer) will also benefit.

H. S. Shadrach
Asst. Freight Claim Agent

Automatic Washer Co.

To: NST General Chairman

You (Ralph Bisbee) are to be congratulated on the recognition by the National Safe Transit Committee of the Porcelain Enamel Institute which was published in the May issue of *finish*. It was a well-deserved honor as in many instances it has been necessary for you to carry on this program within the limits of your own organization.

I know that the test procedures that you and your organization have developed have been extremely helpful in reducing transportation damage, and if closely followed will enable a company to pre-test packaging of a new product so that costly field experience is eliminated.

While we are relatively a small company, *we have benefitted materially* from our membership in the National Safe Transit Committee. I feel sure that other companies who have participated have had similar experience.

Frank Breckenridge
President and General Manager

Spencer Motor Service, Inc.

To: NST Educational Division

I believe that I can safely say for the transportation industry, that for many years very little, and certainly not enough, recognition has been given to the fact that much of the transportation damage was not the sole responsibility on the part of the carrier but also due to improper shipping containers and packing on the part of the shipping public.

As a representative of one of the larger common motor carriers, it is a privilege to express to you, personally, our sincere appreciation for the terrific accomplishments of the National Safe Transit Committee as far as the shipping public is concerned.

R. J. Leuser
Director of Freight Handling

E. I. du Pont de Nemours Co.

To: NST Educational Committee

The First Annual Safe Transit Conference, sponsored by the National Safe Transit Committee, was well attended by many representatives, including traffic managers, of numerous industries, also representatives of both railroads and truck lines, all of whom are very much interested in seeing that finished products are packed properly, so as to move safely in transit via any mode of transportation, so the ultimate consumers will receive the manufactured articles in perfect condition.

Without question, I am confident that everyone who attended this conference, including myself, is interested in eliminating damage in transit of manufactured products, and everyone present obtained a clear picture of what your conference is striving to accomplish.

H. F. Mick, A.T.M.
Chicago, Illinois

---

the grip of an **iron fist**

in a soft **velvet glove**

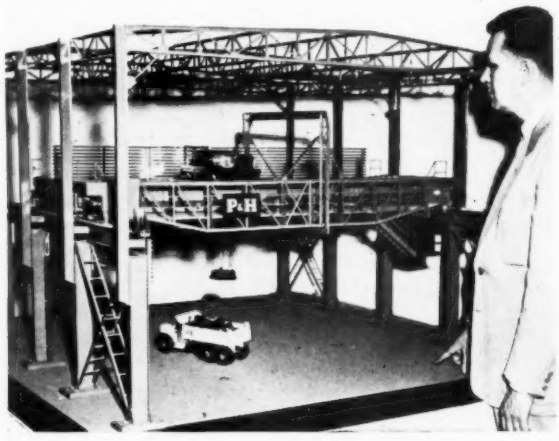
cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.

Sackner Products
900 Ottawa Avenue, N.W.
GRAND RAPIDS 2, MICHIGAN

MINIATURE OVERHEAD CRANE DISPLAYED BY P&H AT MATERIALS HANDLING SHOW

A miniature operating model of a P&H overhead crane was displayed at the recent Materials Handling Show, in Philadelphia, by Harnischfeger Corp., of Milwaukee. Visitors were able to enjoy the actual experience of running a big crane, picking up material, and depositing it in designated spots. The model crane, complete with actual controls, was said to be an exact replica of a P&H crane. Visitors who completed a successful run received an honorary "Big Time Operator's Card." Harnischfeger's hoist division featured a new low-coat zip-lift electric hoist with wire rope control. Push-button models of hoists were also displayed.



Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★

FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

A shipping container for every shipping purpose

Sending your crated product through the Chicago Mill and Lumber Company Laboratory is like taking out an insurance policy for safe delivery.

Experienced engineers and crate designers use the latest in testing equipment in search for weakness that may result in transit damage to your valuable finished products. Assurance of safe arrival will result from pre-shipment testing in our National Safe Transit certified laboratory. Avail yourself of this service.

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — **Chicago 3, Illinois**

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

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RATHBORNE, HAIR & RIDGWAY BOX CO.	ST-9
REPUBLIC STEEL CORPORATION	7
ROBBINS & MYERS, INC.	62
ROBERTSHAW-FULTON CONTROLS CO.	61
SACKNER PRODUCTS, INC.	ST-18
SCIENTIFIC ELECTRIC	57
SHERWIN-WILLIAMS CO., THE	38
SIGNODE STEEL STRAPPING COMPANY	ST-13
SORENG PRODUCTS CORPORATION	15
TINNERMAN PRODUCTS, INC.	29
TITANIUM PIGMENT CORPORATION	9
TUTTLE & KIFT, INC.	4th COVER
UDYLITE CORPORATION	48
UNION STEEL PRODUCTS COMPANY	3rd COVER
WATKINS CONTAINER MANUFACTURERS	ST-6
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expansion of the private domestic market.

"Our domestic market for consumer goods is neither saturated, nor approaching saturation," he pointed out. "The trend of population and the improvement in standard of living in this country in the past half-century points to a continued vigorous rise in the domestic demand for goods on the part of both American consumers and American business."

To maintain new production facilities at a high level of activity will require new distribution and sales techniques, keyed to a vastly greater business investment in research facilities, and the vastly wider technological horizons opened in the past several years, stated Gainsbrugh.

"This is an age of research and new distribution techniques. One without the other would be useless," he concluded.